



06/19/13

## Technical Report for

**Aquaterra Technologies, Inc.**

**Sun-Marcus Hook Refinery, Philadelphia, PA**

**AOI-5**

**Accutest Job Number: JB38251**

**Sampling Date: 05/29/13**

### Report to:

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**Total number of pages in report: 258**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

A handwritten signature in black ink that reads "Nancy T. Cole".

**Nancy Cole  
Laboratory Director**

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Certifications: NJ(12129), NY(10983), CA, CT, DE, FL, IL, IN, KS, KY, LA, MA, MD, MI, MT, NC, OH VAP (CL0056), PA, RI, SC, TN, VA, WV

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Test results relate only to samples analyzed.

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## Sample Summary

Aquaterra Technologies, Inc.

Job No: JB38251

Sun-Marcus Hook Refinery, Philadelphia, PA  
Project No: AOI-5

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
JB38251-1	05/29/13	11:00 LM	05/29/13	SO	Soil	AOI-5_MW-438_8-10'_52913
JB38251-2	05/29/13	12:00 LM	05/29/13	SO	Soil	AOI-5_MW-434_0-2'_52913
JB38251-3	05/29/13	14:00 LM	05/29/13	SO	Soil	AOI-5_MW-442_0-2'_052913
JB38251-4	05/29/13	14:20 LM	05/29/13	SO	Soil	AOI-5_MW-442_6-8'_052913

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Soil samples reported on a dry weight basis unless otherwise indicated on result page.



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** Aquaterra Technologies, Inc.

**Job No** JB38251

**Site:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Report Date** 6/19/2013 5:55:36 PM

On 05/29/2013, 4 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at Accutest Laboratories at a temperature of 6 C. Samples were intact and chemically preserved, unless noted below. An Accutest Job Number of JB38251 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

**Matrix:** SO

**Batch ID:** VD8559

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB38485-1MS, JB38485-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- JB38251-1 for 4-Bromofluorobenzene: Outside control limits due to matrix interference. Confirmed by reanalysis.

**Matrix:** SO

**Batch ID:** VD8566

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB38570-10MS, JB38570-10MSD were used as the QC samples indicated.
- Matrix Spike/Matrix Spike Duplicate Recovery(s) for 1,3,5-Trimethylbenzene, Methyl Tert Butyl Ether, 1,2,4-Trimethylbenzene, Ethylbenzene are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- JB38251-1: Confirmation run for surrogate recoveries.
- JB38251-4 for Toluene-D8: Outside control limits due to matrix interference. Confirmed by reanalysis.

**Matrix:** SO

**Batch ID:** VD8568

- The data for SW846 8260B meets quality control requirements.
- JB38251-4: Confirmation run for surrogate recoveries.

**Matrix:** SO

**Batch ID:** VI7467

- All samples were analyzed within the recommended method holding time.
- Sample(s) JB38152-2DUP, JB38251-3MS were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,2-Dichloroethane are outside control limits. High percent recoveries and no associated positive found in the QC batch.

## Extractables by GCMS By Method SW846 8270C

**Matrix:** SO

**Batch ID:** M:OP33500

- The data for SW846 8270C meets quality control requirements.
- JB38251-1: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-2: Elevated RL due to dilution required for matrix interference. Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-4: Analysis performed at Accutest Laboratories, Marlborough, MA.

## Volatiles by GC By Method SW846 8011

**Matrix:** SO

**Batch ID:** M:OP33518

- The data for SW846 8011 meets quality control requirements.
- JB38251-3: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-4: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-2: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-1: Analysis performed at Accutest Laboratories, Marlborough, MA.

## Metals By Method SW846 6010C

**Matrix:** SO

**Batch ID:** M:MP21112

- The data for SW846 6010C meets quality control requirements.
- JB38251-1 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-2 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-3 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-4 for Lead: Analysis performed at Accutest Laboratories, Marlborough, MA.

## Wet Chemistry By Method SM21 2540 B MOD.

**Matrix:** SO

**Batch ID:** M:GN43105

- The data for SM21 2540 B MOD. meets quality control requirements.
- JB38251-2 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-3 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-1 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.
- JB38251-4 for Solids, Percent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Accutest certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting Accutest's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

Accutest Laboratories is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by Accutest Laboratories indicated via signature on the report cover



## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest New Jersey

**Job No** JB38251

**Site:** AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

**Report Date** 6/19/2013 11:39:50 AM

4 Sample(s) were collected on 05/29/2013 and were received at Accutest of NJ on 05/29/2013, at Accutest of NE on 05/31/2013 properly preserved, at 0.8 Deg. C and intact. These Samples received an Accutest job number of JB38251. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Extractables by GCMS By Method SW846 8270C

<b>Matrix</b> SO	<b>Batch ID:</b> OP33500
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB38374-1MS, JB38374-1MSD were used as the QC samples indicated.
- MS/MSD Recovery(s) for Phenanthrene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- JB38251-2: Elevated RL due to dilution required for matrix interference.

### Volatiles by GC By Method SW846 8011

<b>Matrix</b> SO	<b>Batch ID:</b> OP33518
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- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB38251-1MS, JB38251-1MSD were used as the QC samples indicated.
- Matrix Spike Duplicate Recovery(s) for 1,2-Dibromoethane are outside control limits. Outside control limits due to possible matrix interference.
- OP33518-MSD for Bromofluorobenzene (S): Outside control limits due to possible matrix interference.

### Metals By Method SW846 6010C

<b>Matrix</b> SO	<b>Batch ID:</b> MP21112
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- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC20885-1RMS, MC20885-1RMSD, MC20885-1RSCL were used as the QC samples for metals.

### Wet Chemistry By Method SM21 2540 B MOD.

<b>Matrix</b> SO	<b>Batch ID:</b> GN43105
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- Sample(s) MC21351-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(JB38251).

## Summary of Hits

Page 1 of 2

Job Number: JB38251  
Account: Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA  
Collected: 05/29/13

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Lab Sample ID	Client Sample ID	Result/ Analyte	Qual	RL	MDL	Units	Method
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JB38251-1 AOI-5\_MW-438\_8-10'\_52913

Toluene	0.0453 J	0.12	0.012	mg/kg	SW846 8260B
Ethylbenzene	4.36	0.12	0.031	mg/kg	SW846 8260B
Xylene (total)	13.0	0.12	0.016	mg/kg	SW846 8260B
Isopropylbenzene	7.29	0.58	0.0086	mg/kg	SW846 8260B
1,2,4-Trimethylbenzene	1.74	0.58	0.024	mg/kg	SW846 8260B
1,3,5-Trimethylbenzene	0.536 J	0.58	0.019	mg/kg	SW846 8260B
Anthracene <sup>a</sup>	0.165	0.13	0.015	mg/kg	SW846 8270C
Benzo(a)anthracene <sup>a</sup>	0.186	0.13	0.016	mg/kg	SW846 8270C
Benzo(a)pyrene <sup>a</sup>	0.133	0.13	0.014	mg/kg	SW846 8270C
Benzo(b)fluoranthene <sup>a</sup>	0.0545 J	0.13	0.016	mg/kg	SW846 8270C
Benzo(g,h,i)perylene <sup>a</sup>	0.128 J	0.13	0.013	mg/kg	SW846 8270C
Chrysene <sup>a</sup>	0.341	0.13	0.016	mg/kg	SW846 8270C
Fluorene <sup>a</sup>	0.568	0.13	0.017	mg/kg	SW846 8270C
Naphthalene <sup>a</sup>	0.357	0.13	0.020	mg/kg	SW846 8270C
Phenanthrene <sup>a</sup>	1.65	0.13	0.017	mg/kg	SW846 8270C
Pyrene <sup>a</sup>	0.489	0.13	0.015	mg/kg	SW846 8270C
Lead <sup>a</sup>	6.8	1.0	0.17	mg/kg	SW846 6010C

JB38251-2 AOI-5\_MW-434\_0-2'\_52913

Benzo(g,h,i)perylene <sup>b</sup>	0.545 J	0.55	0.055	mg/kg	SW846 8270C
Lead <sup>a</sup>	98.8	1.0	0.17	mg/kg	SW846 6010C

JB38251-3 AOI-5\_MW-442\_0-2'\_052913

Lead <sup>a</sup>	65.6	1.0	0.17	mg/kg	SW846 6010C
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JB38251-4 AOI-5\_MW-442\_6-8'\_052913

Benzene	8.62	0.11	0.013	mg/kg	SW846 8260B
Toluene	8.08	0.11	0.012	mg/kg	SW846 8260B
Ethylbenzene	11.3	0.11	0.029	mg/kg	SW846 8260B
Xylene (total)	55.1	0.11	0.016	mg/kg	SW846 8260B
Isopropylbenzene	1.55	0.56	0.0083	mg/kg	SW846 8260B
1,2,4-Trimethylbenzene	19.2	0.56	0.023	mg/kg	SW846 8260B
1,3,5-Trimethylbenzene	6.82	0.56	0.018	mg/kg	SW846 8260B
Anthracene <sup>a</sup>	0.0736 J	0.12	0.015	mg/kg	SW846 8270C
Benzo(a)anthracene <sup>a</sup>	0.0185 J	0.12	0.016	mg/kg	SW846 8270C
Chrysene <sup>a</sup>	0.0258 J	0.12	0.015	mg/kg	SW846 8270C
Fluorene <sup>a</sup>	0.255	0.12	0.016	mg/kg	SW846 8270C
Naphthalene <sup>a</sup>	1.33	0.12	0.020	mg/kg	SW846 8270C
Phenanthrene <sup>a</sup>	0.675	0.12	0.017	mg/kg	SW846 8270C
Pyrene <sup>a</sup>	0.153	0.12	0.014	mg/kg	SW846 8270C

## Summary of Hits

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Job Number: JB38251  
Account: Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA  
Collected: 05/29/13

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Lab Sample ID Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
1,2-Dibromoethane <sup>a</sup>		0.0044	0.0031	0.0012	mg/kg	SW846 8011
Lead <sup>a</sup>		10.9	1.0	0.17	mg/kg	SW846 6010C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Elevated RL due to dilution required for matrix interference. Analysis performed at Accutest Laboratories, Marlborough, MA.



4

## Sample Results

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## Report of Analysis

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Accutest Laboratories

## Report of Analysis

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Client Sample ID:	AOI-5_MW-438_8-10'_52913	Date Sampled:	05/29/13
Lab Sample ID:	JB38251-1	Date Received:	05/29/13
Matrix:	SO - Soil	Percent Solids:	77.9
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D209729.D	1	06/06/13	ET	n/a	n/a	VD8559
Run #2 <sup>a</sup>	D209871.D	1	06/10/13	ET	n/a	n/a	VD8566

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.3 g	10.0 ml	100 ul
Run #2	6.3 g	10.0 ml	20.0 ul

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.12	0.014	mg/kg	
108-88-3	Toluene	0.0453	0.12	0.012	mg/kg	J
100-41-4	Ethylbenzene	4.36	0.12	0.031	mg/kg	
1330-20-7	Xylene (total)	13.0	0.12	0.016	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.12	0.027	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.12	0.016	mg/kg	
98-82-8	Isopropylbenzene	7.29	0.58	0.0086	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	1.74	0.58	0.024	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	0.536	0.58	0.019	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	90%	90%	65-131%
17060-07-0	1,2-Dichloroethane-D4	94%	93%	70-121%
2037-26-5	Toluene-D8	120%	100%	80-128%
460-00-4	4-Bromofluorobenzene	175% <sup>b</sup>	107%	67-131%

(a) Confirmation run for surrogate recoveries.

(b) Outside control limits due to matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

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**Client Sample ID:** AOI-5\_MW-438\_8-10'\_52913  
**Lab Sample ID:** JB38251-1  
**Matrix:** SO - Soil  
**Method:** SW846 8270C SW846 3546  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 05/29/13  
**Date Received:** 05/29/13  
**Percent Solids:** 77.9

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W13044.D	1	06/12/13	AMA	06/06/13	M:OP33500	M:MSW599
Run #2							

	Initial Weight	Final Volume
Run #1	20.2 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.165	0.13	0.015	mg/kg	
56-55-3	Benzo(a)anthracene	0.186	0.13	0.016	mg/kg	
50-32-8	Benzo(a)pyrene	0.133	0.13	0.014	mg/kg	
205-99-2	Benzo(b)fluoranthene	0.0545	0.13	0.016	mg/kg	J
191-24-2	Benzo(g,h,i)perylene	0.128	0.13	0.013	mg/kg	J
218-01-9	Chrysene	0.341	0.13	0.016	mg/kg	
86-73-7	Fluorene	0.568	0.13	0.017	mg/kg	
91-20-3	Naphthalene	0.357	0.13	0.020	mg/kg	
85-01-8	Phenanthrene	1.65	0.13	0.017	mg/kg	
129-00-0	Pyrene	0.489	0.13	0.015	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	64%		30-130%
321-60-8	2-Fluorobiphenyl	61%		30-130%
1718-51-0	Terphenyl-d14	66%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

**Report of Analysis**

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Client Sample ID: AOI-5\_MW-438\_8-10'\_52913

Lab Sample ID: JB38251-1

Date Sampled: 05/29/13

Matrix: SO - Soil

Date Received: 05/29/13

Method: SW846 8011 SW846 3550B

Percent Solids: 77.9

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	YZ81256.D	1	06/09/13	AMA	06/07/13	M:OP33518	M:GYZ7174

	Initial Weight	Final Volume
Run #1	30.8 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0031	0.0012	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	148%		61-167%
460-00-4	Bromofluorobenzene (S)	111%		61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

**Client Sample ID:** AOI-5\_MW-438\_8-10'\_52913  
**Lab Sample ID:** JB38251-1  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 05/29/13  
**Date Received:** 05/29/13  
**Percent Solids:** 77.9

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead <sup>a</sup>	<b>6.8</b>	1.0	0.17	mg/kg	1	06/04/13	06/05/13	AMA SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15702

(2) Prep QC Batch: M:MP21112

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.2  
4

Client Sample ID: AOI-5\_MW-434\_0-2'\_52913

Lab Sample ID: JB38251-2

Date Sampled: 05/29/13

Matrix: SO - Soil

Date Received: 05/29/13

Method: SW846 8260B

Percent Solids: 90.9

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I184811.D	1	06/01/13	SJM	n/a	n/a	VI7467
Run #2							

## Initial Weight

Run #1 5.3 g

Run #2

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00012	mg/kg	
108-88-3	Toluene	ND	0.0010	0.00011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	0.00027	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	0.00014	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00024	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0052	0.000077	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0052	0.00022	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0052	0.00017	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	96%		65-131%
17060-07-0	1,2-Dichloroethane-D4	115%		70-121%
2037-26-5	Toluene-D8	100%		80-128%
460-00-4	4-Bromofluorobenzene	123%		67-131%

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.2  
4

Client Sample ID:	AOI-5_MW-434_0-2' 52913	Date Sampled:	05/29/13
Lab Sample ID:	JB38251-2	Date Received:	05/29/13
Matrix:	SO - Soil	Percent Solids:	90.9
Method:	SW846 8270C SW846 3546		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	W13045.D	5	06/12/13	AMA	06/06/13	M:OP33500	M:MSW599

Run #1	Initial Weight	Final Volume
Run #1	20.1 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.55	0.066	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.55	0.071	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.55	0.059	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.55	0.069	mg/kg	
191-24-2	Benzo(g,h,i)perylene	0.545	0.55	0.055	mg/kg	J
218-01-9	Chrysene	ND	0.55	0.068	mg/kg	
86-73-7	Fluorene	ND	0.55	0.073	mg/kg	
91-20-3	Naphthalene	ND	0.55	0.088	mg/kg	
85-01-8	Phenanthrene	ND	0.55	0.074	mg/kg	
129-00-0	Pyrene	ND	0.55	0.064	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	47%		30-130%
321-60-8	2-Fluorobiphenyl	56%		30-130%
1718-51-0	Terphenyl-d14	69%		30-130%

(a) Elevated RL due to dilution required for matrix interference. Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.2

4

**Client Sample ID:** AOI-5\_MW-434\_0-2'\_52913  
**Lab Sample ID:** JB38251-2  
**Matrix:** SO - Soil  
**Method:** SW846 8011 SW846 3550B  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

Date Sampled: 05/29/13  
 Date Received: 05/29/13  
 Percent Solids: 90.9

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	YZ81257.D	1	06/09/13	AMA	06/07/13	M:OP33518	M:GYZ7174
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0027	0.0010	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	142%		61-167%		
460-00-4	Bromofluorobenzene (S)	127%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

**Client Sample ID:** AOI-5\_MW-434\_0-2'\_52913  
**Lab Sample ID:** JB38251-2  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 05/29/13  
**Date Received:** 05/29/13  
**Percent Solids:** 90.9

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead <sup>a</sup>	98.8	1.0	0.17	mg/kg	1	06/04/13	06/05/13	AMA SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15702

(2) Prep QC Batch: M:MP21112

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.3  
4

**Client Sample ID:** AOI-5\_MW-442\_0-2'\_052913  
**Lab Sample ID:** JB38251-3  
**Matrix:** SO - Soil  
**Method:** SW846 8260B  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 05/29/13  
**Date Received:** 05/29/13  
**Percent Solids:** 90.0

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	I184812.D	1	06/01/13	SJM	n/a	n/a	VI7467
Run #2							

	Initial Weight
Run #1	5.5 g
Run #2	

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.0010	0.00012	mg/kg	
108-88-3	Toluene	ND	0.0010	0.00011	mg/kg	
100-41-4	Ethylbenzene	ND	0.0010	0.00027	mg/kg	
1330-20-7	Xylene (total)	ND	0.0010	0.00014	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.0010	0.00024	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.0010	0.00014	mg/kg	
98-82-8	Isopropylbenzene	ND	0.0051	0.000075	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	0.0051	0.00021	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	0.0051	0.00016	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	94%		65-131%
17060-07-0	1,2-Dichloroethane-D4	114%		70-121%
2037-26-5	Toluene-D8	97%		80-128%
460-00-4	4-Bromofluorobenzene	109%		67-131%

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.3  
4

**Client Sample ID:** AOI-5\_MW-442\_0-2'\_052913  
**Lab Sample ID:** JB38251-3  
**Matrix:** SO - Soil  
**Method:** SW846 8270C SW846 3546  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 05/29/13  
**Date Received:** 05/29/13  
**Percent Solids:** 90.0

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	W13046.D	1	06/12/13	AMA	06/06/13	M:OP33500	M:MSW599
Run #2							

	Initial Weight	Final Volume
Run #1	20.5 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	0.11	0.013	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.11	0.014	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.11	0.012	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.11	0.014	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.11	0.011	mg/kg	
218-01-9	Chrysene	ND	0.11	0.013	mg/kg	
86-73-7	Fluorene	ND	0.11	0.014	mg/kg	
91-20-3	Naphthalene	ND	0.11	0.017	mg/kg	
85-01-8	Phenanthrene	ND	0.11	0.015	mg/kg	
129-00-0	Pyrene	ND	0.11	0.013	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	52%		30-130%
321-60-8	2-Fluorobiphenyl	62%		30-130%
1718-51-0	Terphenyl-d14	76%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

4.3  
4

Client Sample ID: AOI-5\_MW-442\_0-2'\_052913  
 Lab Sample ID: JB38251-3  
 Matrix: SO - Soil  
 Method: SW846 8011 SW846 3550B  
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	YZ81258.D	1	06/09/13	AMA	06/07/13	M:OP33518	M:GYZ7174
Run #2							

	Initial Weight	Final Volume
Run #1	30.3 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	0.0028	0.0011	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
460-00-4	Bromofluorobenzene (S)	149%		61-167%		
460-00-4	Bromofluorobenzene (S)	133%		61-167%		

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

**Client Sample ID:** AOI-5\_MW-442\_0-2'\_052913  
**Lab Sample ID:** JB38251-3  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 05/29/13  
**Date Received:** 05/29/13  
**Percent Solids:** 90.0

**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method
Lead <sup>a</sup>	65.6	1.0	0.17	mg/kg	1	06/04/13	06/05/13	AMA SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15702

(2) Prep QC Batch: M:MP21112

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL

Accutest Laboratories

## Report of Analysis

Page 1 of 1

Client Sample ID:	AOI-5_MW-442_6-8'_052913	Date Sampled:	05/29/13
Lab Sample ID:	JB38251-4	Date Received:	05/29/13
Matrix:	SO - Soil	Percent Solids:	79.1
Method:	SW846 8260B		
Project:	Sun-Marcus Hook Refinery, Philadelphia, PA		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	D209872.D	1	06/10/13	ET	n/a	n/a	VD8566
Run #2 <sup>a</sup>	D209922.D	1	06/11/13	ET	n/a	n/a	VD8568

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	6.4 g	10.0 ml	100 ul
Run #2	6.4 g	10.0 ml	5.0 ul

## Leaded Gasoline and Aviation Gas List

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	8.62	0.11	0.013	mg/kg	
108-88-3	Toluene	8.08	0.11	0.012	mg/kg	
100-41-4	Ethylbenzene	11.3	0.11	0.029	mg/kg	
1330-20-7	Xylene (total)	55.1	0.11	0.016	mg/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	0.11	0.026	mg/kg	
107-06-2	1,2-Dichloroethane	ND	0.11	0.015	mg/kg	
98-82-8	Isopropylbenzene	1.55	0.56	0.0083	mg/kg	
95-63-6	1,2,4-Trimethylbenzene	19.2	0.56	0.023	mg/kg	
108-67-8	1,3,5-Trimethylbenzene	6.82	0.56	0.018	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	91%	102%	65-131%
17060-07-0	1,2-Dichloroethane-D4	99%	107%	70-121%
2037-26-5	Toluene-D8	131% <sup>b</sup>	110%	80-128%
460-00-4	4-Bromofluorobenzene	92%	106%	67-131%

(a) Confirmation run for surrogate recoveries.

(b) Outside control limits due to matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Accutest Laboratories

## Report of Analysis

Page 1 of 1

**Client Sample ID:** AOI-5\_MW-442\_6-8'\_052913  
**Lab Sample ID:** JB38251-4  
**Matrix:** SO - Soil  
**Method:** SW846 8270C SW846 3546  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

**Date Sampled:** 05/29/13  
**Date Received:** 05/29/13  
**Percent Solids:** 79.1

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W13047.D	1	06/12/13	AMA	06/06/13	M:OP33500	M:MSW599
Run #2							

Run #1	Initial Weight	Final Volume
Run #1	20.6 g	1.0 ml
Run #2		

## BN Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	0.0736	0.12	0.015	mg/kg	J
56-55-3	Benzo(a)anthracene	0.0185	0.12	0.016	mg/kg	J
50-32-8	Benzo(a)pyrene	ND	0.12	0.013	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.12	0.015	mg/kg	
191-24-2	Benzo(g,h,i)perylene	ND	0.12	0.012	mg/kg	
218-01-9	Chrysene	0.0258	0.12	0.015	mg/kg	J
86-73-7	Fluorene	0.255	0.12	0.016	mg/kg	
91-20-3	Naphthalene	1.33	0.12	0.020	mg/kg	
85-01-8	Phenanthrene	0.675	0.12	0.017	mg/kg	
129-00-0	Pyrene	0.153	0.12	0.014	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	60%		30-130%
321-60-8	2-Fluorobiphenyl	62%		30-130%
1718-51-0	Terphenyl-d14	73%		30-130%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected MDL - Method Detection Limit

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Accutest Laboratories

**Report of Analysis**

Page 1 of 1

Client Sample ID: AOI-5\_MW-442\_6-8'\_052913

Lab Sample ID: JB38251-4

Date Sampled: 05/29/13

Matrix: SO - Soil

Date Received: 05/29/13

Method: SW846 8011 SW846 3550B

Percent Solids: 79.1

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Run #1 <sup>a</sup>	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #2	YZ81259.D	1	06/09/13	AMA	06/07/13	M:OP33518	M:GYZ7174

	Initial Weight	Final Volume
Run #1	30.2 g	50.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	0.0044	0.0031	0.0012	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	Bromofluorobenzene (S)	128%		61-167%
460-00-4	Bromofluorobenzene (S)	156%		61-167%

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

ND = Not detected      MDL - Method Detection Limit  
 RL = Reporting Limit  
 E = Indicates value exceeds calibration range

J = Indicates an estimated value  
 B = Indicates analyte found in associated method blank  
 N = Indicates presumptive evidence of a compound

**Report of Analysis**

Page 1 of 1

**Client Sample ID:** AOI-5\_MW-442\_6-8'\_052913  
**Lab Sample ID:** JB38251-4  
**Matrix:** SO - Soil  
**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

4.4

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**Metals Analysis**

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed By	Method	Prep Method	
Lead <sup>a</sup>	10.9	1.0	0.17	mg/kg	1	06/04/13	06/05/13	AMA	SW846 6010C <sup>1</sup>	SW846 3050B <sup>2</sup>

(1) Instrument QC Batch: M:MA15702

(2) Prep QC Batch: M:MP21112

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

**RL** = Reporting Limit  
**MDL** = Method Detection Limit

**U** = Indicates a result < MDL  
**B** = Indicates a result > = MDL but < RL



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



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## CHAIN OF CUSTODY

PAGE / OF /

2235 Route 130, Dayton, NJ 08810  
TEL. 732-329-0200 FAX: 732-329-3499/3480  
[www.accutest.com](http://www.accutest.com)

**JB38251: Chain of Custody**

JB38251

Constituents of Concern for Soil  
Sunoco Philadelphia Refinery  
Philadelphia, Pennsylvania

METALS	CAS No.	Method
Lead (total)	7439-92-1	SW846 6010C/C-LD

VOLATILE ORGANIC COMPOUNDS	CAS No.	Method
1,2-Dichloroethane	107-06-2	
1,2,4-Trimethylbenzene	95-63-6	
1,3,5-Trimethylbenzene	108-67-8	
Benzene	71-43-2	
Cumene	98-82-8	
Ethylbenzene	100-41-4	
Methyl tertiary butyl ether	1634-04-4	
Toluene	108-88-3	
Xylenes (total)	1330-20-7	
Ethylene dibromide	106-93-4	SW846 8011-LD

SEMI-VOLATILE ORGANIC COMPOUNDS	CAS No.	Method
Anthracene	120-12-7	
Benzolanthracene	56-55-3	
Benzo [g,h,i] benzene	191-24-2	
Benzol[b]pyrene	50-32-8	
Benzol[bifluoranthene	205-99-2	
Chrysene	218-01-9	
Fluorene	86-73-7	
Naphthalene**	91-20-3	
Phenanthrene	85-01-8	
Fyrene	129-00-0	

## Notes:

As indicated by the "LD", all samples are to be analyzed using the lowest dilution possible.

\*For tank investigations, naphthalene is to be run using analytical method SW846 8260 and should be appropriately marked on the chain of custody.



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB38251

Client:

Project:

Date / Time Received: 5/29/2013

Delivery Method:

Airbill #'s:

Cooler Temps (Initial/Adjusted): #1: (6/6): 0

**Cooler Security**Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Bar Therm                           |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 1                                   |                          |

**Quality Control\_Preservatio**Y or N N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**Y or N N/A

- |   |                                     |                                     |
|---|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            |

Comments

Accutest Laboratories  
V:732.329.02002235 US Highway 130  
F: 732.329.3499Dayton, New Jersey  
[www.accutest.com](http://www.accutest.com)**JB38251: Chain of Custody****Page 3 of 3**

Accutest Laboratories

## Internal Sample Tracking Chronicle

Aquaterra Technologies, Inc.

Job No: JB38251

Sun-Marcus Hook Refinery, Philadelphia, PA  
Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped By	Test Codes
JB38251-1	Collected: 29-MAY-13 11:00	By: LM	Received: 29-MAY-13	By: AS	
AOI-5_MW-438_8-10'_52913					
JB38251-1	SM21 2540 B MOD.	02-JUN-13	AMA		%SOL
JB38251-1	SW846 6010C	05-JUN-13 00:23	AMA	04-JUN-13	AMA PB
JB38251-1	SW846 8260B	06-JUN-13 04:32	ET		V8260SL
JB38251-1	SW846 8011	09-JUN-13 01:26	AMA	07-JUN-13	AMA V8011EDB
JB38251-1	SW846 8260B	10-JUN-13 15:22	ET		V8260SL
JB38251-1	SW846 8270C	12-JUN-13 04:05	AMA	06-JUN-13	AMA B8270SL
JB38251-2	Collected: 29-MAY-13 12:00	By: LM	Received: 29-MAY-13	By: AS	
AOI-5_MW-434_0-2'_52913					
JB38251-2	SW846 8260B	01-JUN-13 13:07	SJM		V8260SL
JB38251-2	SM21 2540 B MOD.	02-JUN-13	AMA		%SOL
JB38251-2	SW846 6010C	05-JUN-13 00:28	AMA	04-JUN-13	AMA PB
JB38251-2	SW846 8011	09-JUN-13 01:57	AMA	07-JUN-13	AMA V8011EDB
JB38251-2	SW846 8270C	12-JUN-13 04:30	AMA	06-JUN-13	AMA B8270SL
JB38251-3	Collected: 29-MAY-13 14:00	By: LM	Received: 29-MAY-13	By: AS	
AOI-5_MW-442_0-2'_052913					
JB38251-3	SW846 8260B	01-JUN-13 13:36	SJM		V8260SL
JB38251-3	SM21 2540 B MOD.	02-JUN-13	AMA		%SOL
JB38251-3	SW846 6010C	05-JUN-13 00:32	AMA	04-JUN-13	AMA PB
JB38251-3	SW846 8011	09-JUN-13 02:29	AMA	07-JUN-13	AMA V8011EDB
JB38251-3	SW846 8270C	12-JUN-13 04:55	AMA	06-JUN-13	AMA B8270SL
JB38251-4	Collected: 29-MAY-13 14:20	By: LM	Received: 29-MAY-13	By: AS	
AOI-5_MW-442_6-8'_052913					
JB38251-4	SM21 2540 B MOD.	02-JUN-13	AMA		%SOL
JB38251-4	SW846 6010C	05-JUN-13 00:36	AMA	04-JUN-13	AMA PB
JB38251-4	SW846 8011	09-JUN-13 03:01	AMA	07-JUN-13	AMA V8011EDB
JB38251-4	SW846 8260B	10-JUN-13 15:51	ET		V8260SL
JB38251-4	SW846 8260B	11-JUN-13 18:53	ET		V8260SL
JB38251-4	SW846 8270C	12-JUN-13 05:20	AMA	06-JUN-13	AMA B8270SL

## Accutest Internal Chain of Custody

Page 1 of 2

Job Number: JB38251  
Account: AQTAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA  
Received: 05/29/13

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB38251-1.1	Secured Storage Robert Lofrano	Robert Lofrano	05/30/13 10:59	Retrieve from Storage
JB38251-1.1			05/30/13 11:30	Subcontract
JB38251-1.2	Secured Storage Robert Lofrano	Robert Lofrano	05/30/13 10:59	Retrieve from Storage
JB38251-1.2			05/30/13 11:30	Subcontract
JB38251-1.3	Secured Storage Emily Tran	Emily Tran	06/04/13 14:01	Retrieve from Storage
JB38251-1.3	Secured Storage Emily Tran	Secured Storage	06/04/13 15:22	Return to Storage
JB38251-1.3	Secured Storage Emily Tran	Emily Tran	06/06/13 11:11	Retrieve from Storage
JB38251-1.3	Secured Storage Emily Tran	Secured Storage	06/06/13 16:16	Return to Storage
JB38251-2.1	Secured Storage Robert Lofrano	Robert Lofrano	05/30/13 10:59	Retrieve from Storage
JB38251-2.1			05/30/13 11:30	Subcontract
JB38251-2.2	Secured Storage Robert Lofrano	Robert Lofrano	05/30/13 10:59	Retrieve from Storage
JB38251-2.2			05/30/13 11:30	Subcontract
JB38251-2.4	Secured Storage Juntae Park	Juntae Park	06/01/13 12:40	Retrieve from Storage
JB38251-2.4	GCMSI	GCMSI	06/01/13 12:40	Load on Instrument
JB38251-2.4	Scott McGonigal	Scott McGonigal	06/07/13 14:20	Unload from Instrument
JB38251-2.4			06/07/13 14:21	Depleted
JB38251-2.5	Secured Storage Juntae Park	Juntae Park	06/01/13 12:40	Retrieve from Storage
JB38251-2.5	GCMSI	GCMSI	06/01/13 12:40	Load on Instrument
JB38251-2.5	Scott McGonigal	Scott McGonigal	06/07/13 14:20	Unload from Instrument
JB38251-2.5			06/07/13 14:21	Depleted
JB38251-3.1	Secured Storage Robert Lofrano	Robert Lofrano	05/30/13 10:59	Retrieve from Storage
JB38251-3.1			05/30/13 11:30	Subcontract
JB38251-3.2	Secured Storage Robert Lofrano	Robert Lofrano	05/30/13 10:59	Retrieve from Storage
JB38251-3.2			05/30/13 11:30	Subcontract
JB38251-3.4	Secured Storage Juntae Park	Juntae Park	06/01/13 12:40	Retrieve from Storage
JB38251-3.4	GCMSI	GCMSI	06/01/13 12:40	Load on Instrument
JB38251-3.4	Scott McGonigal	Scott McGonigal	06/07/13 14:20	Unload from Instrument
JB38251-3.4			06/07/13 14:21	Depleted
JB38251-3.5	Secured Storage Juntae Park	Juntae Park	06/01/13 12:40	Retrieve from Storage
JB38251-3.5	GCMSI	GCMSI	06/01/13 12:40	Load on Instrument
JB38251-3.5	Scott McGonigal	Scott McGonigal	06/07/13 14:20	Unload from Instrument
JB38251-3.5			06/07/13 14:21	Depleted
JB38251-4.1	Secured Storage	Robert Lofrano	05/30/13 10:59	Retrieve from Storage

## Accutest Internal Chain of Custody

Page 2 of 2

Job Number: JB38251  
Account: AQTAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA  
Received: 05/29/13

Sample/Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB38251-4.1	Robert Lofrano		05/30/13 11:30	Subcontract
JB38251-4.2	Secured Storage	Robert Lofrano	05/30/13 10:59	Retrieve from Storage
JB38251-4.2	Robert Lofrano		05/30/13 11:30	Subcontract
JB38251-4.3	Secured Storage	Emily Tran	06/04/13 14:01	Retrieve from Storage
JB38251-4.3	Emily Tran	Secured Storage	06/04/13 15:22	Return to Storage
JB38251-4.3	Secured Storage	Juntae Park	06/11/13 15:29	Retrieve from Storage
JB38251-4.3	Juntae Park	Secured Storage	06/11/13 15:29	Return to Storage



## GC/MS Volatiles

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### QC Data Summaries

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**Includes the following where applicable:**

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (BFB)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries



**Method Blank Summary**

Job Number: JB38251  
 Account: AQTAW Aquaterra Technologies, Inc.  
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI7467-MB	I184808.D	1	06/01/13	SJM	n/a	n/a	VI7467

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-2, JB38251-3

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.12	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.14	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.26	ug/kg	
98-82-8	Isopropylbenzene	ND	5.0	0.074	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.24	ug/kg	
108-88-3	Toluene	ND	1.0	0.11	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	5.0	0.21	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	5.0	0.16	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.14	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	94%
17060-07-0	1,2-Dichloroethane-D4	109%
2037-26-5	Toluene-D8	99%
460-00-4	4-Bromofluorobenzene	110%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

**Method Blank Summary**

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8559-MB	D209716.D	1	06/05/13	ET	n/a	n/a	VD8559

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	6.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	50	6.8	ug/kg	
100-41-4	Ethylbenzene	ND	50	13	ug/kg	
98-82-8	Isopropylbenzene	ND	250	3.7	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	50	12	ug/kg	
108-88-3	Toluene	ND	50	5.3	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	250	10	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	250	8.0	ug/kg	
1330-20-7	Xylene (total)	ND	50	7.0	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	89%      65-131%
17060-07-0	1,2-Dichloroethane-D4	94%      70-121%
2037-26-5	Toluene-D8	93%      80-128%
460-00-4	4-Bromofluorobenzene	89%      67-131%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

**Method Blank Summary**

Job Number: JB38251  
 Account: AQTPAW Aquaterra Technologies, Inc.  
 Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8566-MB	D209863.D	1	06/10/13	ET	n/a	n/a	VD8566

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-4

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	6.0	ug/kg	
107-06-2	1,2-Dichloroethane	ND	50	6.8	ug/kg	
100-41-4	Ethylbenzene	ND	50	13	ug/kg	
98-82-8	Isopropylbenzene	ND	250	3.7	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	50	12	ug/kg	
108-88-3	Toluene	ND	50	5.3	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	250	10	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	250	8.0	ug/kg	
1330-20-7	Xylene (total)	ND	50	7.0	ug/kg	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	90%      65-131%
17060-07-0	1,2-Dichloroethane-D4	97%      70-121%
2037-26-5	Toluene-D8	93%      80-128%
460-00-4	4-Bromofluorobenzene	93%      67-131%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

**Blank Spike Summary**

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VI7467-BS	I184809.D	1	06/01/13	SJM	n/a	n/a	VI7467

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-2, JB38251-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	48.1	96	79-121
107-06-2	1,2-Dichloroethane	50	71.7	143* <sup>a</sup>	73-132
100-41-4	Ethylbenzene	50	53.1	106	78-119
98-82-8	Isopropylbenzene	50	53.8	108	75-122
1634-04-4	Methyl Tert Butyl Ether	50	54.8	110	73-122
108-88-3	Toluene	50	50.9	102	78-121
95-63-6	1,2,4-Trimethylbenzene	50	53.7	107	76-121
108-67-8	1,3,5-Trimethylbenzene	50	54.4	109	74-121
1330-20-7	Xylene (total)	150	153	102	79-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	97%	65-131%
17060-07-0	1,2-Dichloroethane-D4	117%	70-121%
2037-26-5	Toluene-D8	97%	80-128%
460-00-4	4-Bromofluorobenzene	104%	67-131%

(a) High percent recoveries and no associated positive found in the QC batch.

\* = Outside of Control Limits.

**Blank Spike Summary**

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8559-BS	D209717.D	1	06/05/13	ET	n/a	n/a	VD8559

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2800	112	79-121
107-06-2	1,2-Dichloroethane	2500	3080	123	73-132
100-41-4	Ethylbenzene	2500	2860	114	78-119
98-82-8	Isopropylbenzene	2500	2740	110	75-122
1634-04-4	Methyl Tert Butyl Ether	5000	5620	113	73-122
108-88-3	Toluene	2500	2890	116	78-121
95-63-6	1,2,4-Trimethylbenzene	2500	2750	110	76-121
108-67-8	1,3,5-Trimethylbenzene	2500	2580	103	74-121
1330-20-7	Xylene (total)	7500	8700	116	79-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	90%	65-131%
17060-07-0	1,2-Dichloroethane-D4	98%	70-121%
2037-26-5	Toluene-D8	95%	80-128%
460-00-4	4-Bromofluorobenzene	88%	67-131%

\* = Outside of Control Limits.

**Blank Spike Summary**

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VD8566-BS	D209864.D	1	06/10/13	ET	n/a	n/a	VD8566

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	2500	2480	99	79-121
107-06-2	1,2-Dichloroethane	2500	2890	116	73-132
100-41-4	Ethylbenzene	2500	2650	106	78-119
98-82-8	Isopropylbenzene	2500	2590	104	75-122
1634-04-4	Methyl Tert Butyl Ether	5000	5110	102	73-122
108-88-3	Toluene	2500	2610	104	78-121
95-63-6	1,2,4-Trimethylbenzene	2500	2540	102	76-121
108-67-8	1,3,5-Trimethylbenzene	2500	2370	95	74-121
1330-20-7	Xylene (total)	7500	7930	106	79-120

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	90%	65-131%
17060-07-0	1,2-Dichloroethane-D4	99%	70-121%
2037-26-5	Toluene-D8	93%	80-128%
460-00-4	4-Bromofluorobenzene	90%	67-131%

\* = Outside of Control Limits.

**Matrix Spike Summary**

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB38251-3MS	I184815.D	1	06/01/13	SJM	n/a	n/a	VI7467
JB38251-3	I184812.D	1	06/01/13	SJM	n/a	n/a	VI7467

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-2, JB38251-3

CAS No.	Compound	JB38251-3		Spike	MS	MS	Limits
		ug/kg	Q	ug/kg	ug/kg	%	
71-43-2	Benzene	ND		48.7	42.5	87	47-130
107-06-2	1,2-Dichloroethane	ND		48.7	58.6	120	46-135
100-41-4	Ethylbenzene	ND		48.7	40.7	84	30-139
98-82-8	Isopropylbenzene	ND		48.7	35.4	73	30-140
1634-04-4	Methyl Tert Butyl Ether	ND		97.4	85.1	85	50-127
108-88-3	Toluene	ND		48.7	42.9	88	38-136
95-63-6	1,2,4-Trimethylbenzene	ND		48.7	32.9	68	20-145
108-67-8	1,3,5-Trimethylbenzene	ND		48.7	32.2	66	24-142
1330-20-7	Xylene (total)	ND		146	113	77	31-140

CAS No.	Surrogate Recoveries	MS	JB38251-3	Limits
1868-53-7	Dibromofluoromethane	91%	94%	65-131%
17060-07-0	1,2-Dichloroethane-D4	102%	114%	70-121%
2037-26-5	Toluene-D8	99%	97%	80-128%
460-00-4	4-Bromofluorobenzene	107%	109%	67-131%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB38485-1MS	D209718.D	1	06/05/13	ET	n/a	n/a	VD8559
JB38485-1MSD	D209719.D	1	06/05/13	ET	n/a	n/a	VD8559
JB38485-1	D209721.D	1	06/06/13	ET	n/a	n/a	VD8559

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-1

CAS No.	Compound	JB38485-1 ug/kg	Spike Q	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	3280	3520	107	3230	98	9	47-130/22
107-06-2	1,2-Dichloroethane	ND	3280	3810	116	3580	109	6	46-135/21
100-41-4	Ethylbenzene	ND	3280	3610	110	3240	99	11	30-139/25
98-82-8	Isopropylbenzene	ND	3280	3460	105	3210	98	7	30-140/27
1634-04-4	Methyl Tert Butyl Ether	ND	3280	3420	104	3200	98	7	50-127/21
108-88-3	Toluene	ND	3280	3680	112	3340	102	10	38-136/24
95-63-6	1,2,4-Trimethylbenzene	ND	3280	3360	102	3170	97	6	20-145/28
108-67-8	1,3,5-Trimethylbenzene	ND	3280	3180	97	2970	91	7	24-142/28
1330-20-7	Xylene (total)	ND	9840	10800	110	9860	100	9	31-140/26

CAS No.	Surrogate Recoveries	MS	MSD	JB38485-1	Limits
1868-53-7	Dibromofluoromethane	90%	88%	88%	65-131%
17060-07-0	1,2-Dichloroethane-D4	93%	94%	91%	70-121%
2037-26-5	Toluene-D8	95%	95%	94%	80-128%
460-00-4	4-Bromofluorobenzene	89%	90%	92%	67-131%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB38570-10MS	D209874.D	1	06/10/13	ET	n/a	n/a	VD8566
JB38570-10MSD	D209875.D	1	06/10/13	ET	n/a	n/a	VD8566
JB38570-10	D209877.D	1	06/10/13	ET	n/a	n/a	VD8566

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-4

CAS No.	Compound	JB38570-10		Spike	MS	MS	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	%		
71-43-2	Benzene	1860		4620	5250	73	5380	76	2	47-130/22
107-06-2	1,2-Dichloroethane	ND		4620	4260	92	4380	95	3	46-135/21
100-41-4	Ethylbenzene	27100	E	4620	21100	-130* a	21900	-112* a	4	30-139/25
98-82-8	Isopropylbenzene	3810		4620	6230	52	6470	58	4	30-140/27
1634-04-4	Methyl Tert Butyl Ether	10700		4620	11200	11* a	11500	17* a	3	50-127/21
108-88-3	Toluene	708		4620	4740	87	4760	88	0	38-136/24
95-63-6	1,2,4-Trimethylbenzene	44400	E	4620	34800	-208* a	35800	-186* a	3	20-145/28
108-67-8	1,3,5-Trimethylbenzene	8800		4620	9640	18* a	9700	19* a	1	24-142/28
1330-20-7	Xylene (total)	9840		13900	18600	63	19300	68	4	31-140/26

CAS No.	Surrogate Recoveries	MS	MSD	JB38570-10	Limits
1868-53-7	Dibromofluoromethane	91%	92%	89%	65-131%
17060-07-0	1,2-Dichloroethane-D4	92%	94%	93%	70-121%
2037-26-5	Toluene-D8	99%	96%	100%	80-128%
460-00-4	4-Bromofluorobenzene	89%	95%	95%	67-131%

(a) Outside control limits due to high level in sample relative to spike amount.

\* = Outside of Control Limits.

6.4.2  
6

**Duplicate Summary**

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
JB38152-2DUP	I184817.D	1	06/01/13	SJM	n/a	n/a	VI7467
JB38152-2	I184814.D	1	06/01/13	SJM	n/a	n/a	VI7467

The QC reported here applies to the following samples:

Method: SW846 8260B

JB38251-2, JB38251-3

CAS No.	Compound	JB38152-2		DUP	RPD	Limits
		ug/kg	Q	ug/kg		
71-43-2	Benzene	ND		ND	nc	20
107-06-2	1,2-Dichloroethane	ND		ND	nc	10
100-41-4	Ethylbenzene	ND		ND	nc	19
98-82-8	Isopropylbenzene	ND		ND	nc	15
1634-04-4	Methyl Tert Butyl Ether	ND		ND	nc	16
108-88-3	Toluene	ND		ND	nc	24
95-63-6	1,2,4-Trimethylbenzene	ND		ND	nc	10
108-67-8	1,3,5-Trimethylbenzene	ND		ND	nc	10
1330-20-7	Xylene (total)	ND		ND	nc	24

CAS No.	Surrogate Recoveries	DUP	JB38152-2	Limits
1868-53-7	Dibromofluoromethane	96%	94%	65-131%
17060-07-0	1,2-Dichloroethane-D4	116%	113%	70-121%
2037-26-5	Toluene-D8	99%	101%	80-128%
460-00-4	4-Bromofluorobenzene	116%	110%	67-131%

\* = Outside of Control Limits.

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VD8524-BFB	Injection Date:	05/14/13
Lab File ID:	D208868.D	Injection Time:	17:39
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	10532	17.7	Pass
75	30.0 - 60.0% of mass 95	28104	47.2	Pass
95	Base peak, 100% relative abundance	59570	100.0	Pass
96	5.0 - 9.0% of mass 95	4008	6.73	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	59178	99.3	Pass
175	5.0 - 9.0% of mass 174	4601	7.72	(7.77) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	56389	94.7	(95.3) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	3796	6.37	(6.73) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD8524-IC8524	D208869.D	05/14/13	18:08	00:29	Initial cal 0.5
VD8524-IC8524	D208870.D	05/14/13	18:38	00:59	Initial cal 1
VD8524-IC8524	D208871.D	05/14/13	19:07	01:28	Initial cal 2
VD8524-IC8524	D208872.D	05/14/13	19:36	01:57	Initial cal 5
VD8524-IC8524	D208873.D	05/14/13	20:06	02:27	Initial cal 10
VD8524-IC8524	D208874.D	05/14/13	20:35	02:56	Initial cal 20
VD8524-ICC8524	D208875.D	05/14/13	21:04	03:25	Initial cal 50
VD8524-IC8524	D208876.D	05/14/13	21:33	03:54	Initial cal 100
VD8524-IC8524	D208877.D	05/14/13	22:03	04:24	Initial cal 200
VD8524-ICV8524	D208880.D	05/14/13	23:31	05:52	Initial cal verification 50

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VD8559-BFB	Injection Date:	06/05/13
Lab File ID:	D209713.D	Injection Time:	20:46
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	9139	19.1	Pass
75	30.0 - 60.0% of mass 95	25448	53.2	Pass
95	Base peak, 100% relative abundance	47877	100.0	Pass
96	5.0 - 9.0% of mass 95	3360	7.02	Pass
173	Less than 2.0% of mass 174	322	0.67	(0.66) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	48901	102.1	Pass
175	5.0 - 9.0% of mass 174	3757	7.85	(7.68) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	47992	100.2	(98.1) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	3282	6.86	(6.84) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD8559-CC8524	D209714.D	06/05/13	21:15	00:29	Continuing cal 50
VD8559-MB	D209716.D	06/05/13	22:13	01:27	Method Blank
VD8559-BS	D209717.D	06/05/13	22:42	01:56	Blank Spike
JB38485-1MS	D209718.D	06/05/13	23:11	02:25	Matrix Spike
JB38485-1MSD	D209719.D	06/05/13	23:40	02:54	Matrix Spike Duplicate
JB38485-1	D209721.D	06/06/13	00:38	03:52	(used for QC only; not part of job JB38251)
ZZZZZZ	D209722.D	06/06/13	01:08	04:22	(unrelated sample)
ZZZZZZ	D209723.D	06/06/13	01:37	04:51	(unrelated sample)
ZZZZZZ	D209724.D	06/06/13	02:06	05:20	(unrelated sample)
ZZZZZZ	D209725.D	06/06/13	02:35	05:49	(unrelated sample)
ZZZZZZ	D209726.D	06/06/13	03:04	06:18	(unrelated sample)
ZZZZZZ	D209727.D	06/06/13	03:34	06:48	(unrelated sample)
ZZZZZZ	D209728.D	06/06/13	04:03	07:17	(unrelated sample)
JB38251-1	D209729.D	06/06/13	04:32	07:46	AOI-5_MW-438_8-10'_52913
ZZZZZZ	D209730.D	06/06/13	05:01	08:15	(unrelated sample)
ZZZZZZ	D209732.D	06/06/13	06:00	09:14	(unrelated sample)
ZZZZZZ	D209733.D	06/06/13	06:30	09:44	(unrelated sample)
ZZZZZZ	D209736.D	06/06/13	07:58	11:12	(unrelated sample)

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VD8566-BFB	Injection Date:	06/10/13
Lab File ID:	D209859.D	Injection Time:	08:54
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	9198	20.2	Pass
75	30.0 - 60.0% of mass 95	23037	50.5	Pass
95	Base peak, 100% relative abundance	45607	100.0	Pass
96	5.0 - 9.0% of mass 95	3245	7.12	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	43930	96.3	Pass
175	5.0 - 9.0% of mass 174	3914	8.58	(8.91) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	43460	95.3	(98.9) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	2971	6.51	(6.84) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD8566-CC8524	D209861.D	06/10/13	10:09	01:15	Continuing cal 20
VD8566-MB	D209863.D	06/10/13	11:14	02:20	Method Blank
ZZZZZZ	D209863.D	06/10/13	11:14	02:20	(unrelated sample)
VD8566-BS	D209864.D	06/10/13	11:52	02:58	Blank Spike
ZZZZZZ	D209865.D	06/10/13	12:26	03:32	(unrelated sample)
ZZZZZZ	D209867.D	06/10/13	13:25	04:31	(unrelated sample)
ZZZZZZ	D209868.D	06/10/13	13:54	05:00	(unrelated sample)
ZZZZZZ	D209869.D	06/10/13	14:23	05:29	(unrelated sample)
ZZZZZZ	D209870.D	06/10/13	14:53	05:59	(unrelated sample)
JB38251-1	D209871.D	06/10/13	15:22	06:28	AOI-5_MW-438_8-10'_52913
JB38251-4	D209872.D	06/10/13	15:51	06:57	AOI-5_MW-442_6-8'_052913
JB38570-10MS	D209874.D	06/10/13	16:51	07:57	Matrix Spike
JB38570-10MSD	D209875.D	06/10/13	17:20	08:26	Matrix Spike Duplicate
JB38570-10	D209877.D	06/10/13	18:19	09:25	(used for QC only; not part of job JB38251)
ZZZZZZ	D209880.D	06/10/13	19:46	10:52	(unrelated sample)

**Instrument Performance Check (BFB)**

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VD8568-BFB	Injection Date:	06/11/13
Lab File ID:	D209912.D	Injection Time:	12:53
Instrument ID:	GCMSD		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	9223	20.1	Pass
75	30.0 - 60.0% of mass 95	24850	54.0	Pass
95	Base peak, 100% relative abundance	45992	100.0	Pass
96	5.0 - 9.0% of mass 95	3409	7.41	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	46560	101.2	Pass
175	5.0 - 9.0% of mass 174	3884	8.44	(8.34) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	45520	99.0	(97.8) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	2996	6.51	(6.58) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VD8568-CC8524	D209913A.D	06/11/13	13:52	00:59	Continuing cal 20
ZZZZZZ	D209915.D	06/11/13	14:51	01:58	(unrelated sample)
VD8568-MB	D209915.D	06/11/13	14:51	01:58	Method Blank
VD8568-BS	D209916.D	06/11/13	15:21	02:28	Blank Spike
ZZZZZZ	D209917A.D	06/11/13	16:21	03:28	(unrelated sample)
JB38487-9	D209918.D	06/11/13	16:50	03:57	(used for QC only; not part of job JB38251)
JB38487-9MS	D209919.D	06/11/13	17:25	04:32	Matrix Spike
JB38487-9MSD	D209920.D	06/11/13	17:54	05:01	Matrix Spike Duplicate
ZZZZZZ	D209921.D	06/11/13	18:24	05:31	(unrelated sample)
JB38251-4	D209922.D	06/11/13	18:53	06:00	AOI-5_MW-442_6-8'_052913
ZZZZZZ	D209923.D	06/11/13	19:22	06:29	(unrelated sample)
ZZZZZZ	D209924.D	06/11/13	19:52	06:59	(unrelated sample)
ZZZZZZ	D209927.D	06/11/13	21:20	08:27	(unrelated sample)
ZZZZZZ	D209928.D	06/11/13	21:49	08:56	(unrelated sample)
ZZZZZZ	D209929.D	06/11/13	22:18	09:25	(unrelated sample)
ZZZZZZ	D209930.D	06/11/13	22:47	09:54	(unrelated sample)
ZZZZZZ	D209931.D	06/11/13	23:17	10:24	(unrelated sample)
ZZZZZZ	D209932.D	06/11/13	23:46	10:53	(unrelated sample)

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VI7422-BFB1	Injection Date:	04/26/13
Lab File ID:	I183726.D	Injection Time:	16:11
Instrument ID:	GCMSI		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	14670	15.9	Pass
75	30.0 - 60.0% of mass 95	41472	44.9	Pass
95	Base peak, 100% relative abundance	92413	100.0	Pass
96	5.0 - 9.0% of mass 95	6292	6.81	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	83200	90.0	Pass
175	5.0 - 9.0% of mass 174	6686	7.23	(8.04) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	81016	87.7	(97.4) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	5324	5.76	(6.57) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VI7422-IC7422	I183727.D	04/26/13	16:52	00:41	Initial cal 0.5
VI7422-IC7422	I183728.D	04/26/13	17:21	01:10	Initial cal 1
VI7422-IC7422	I183729.D	04/26/13	17:49	01:38	Initial cal 2
VI7422-IC7422	I183730.D	04/26/13	18:18	02:07	Initial cal 5
VI7422-IC7422	I183731.D	04/26/13	18:47	02:36	Initial cal 10
VI7422-IC7422	I183732.D	04/26/13	19:16	03:05	Initial cal 200
VI7422-IC7422	I183733.D	04/26/13	20:14	04:03	Initial cal 100
VI7422-ICC7422	I183734.D	04/26/13	21:11	05:00	Initial cal 50
VI7422-IC7422	I183735.D	04/26/13	21:40	05:29	Initial cal 20
VI7422-ICV7422	I183736.D	04/26/13	22:09	05:58	Initial cal verification 50
VI7422-ICV7422	I183737.D	04/26/13	23:36	07:25	Initial cal verification 50

# Instrument Performance Check (BFB)

Page 1 of 1

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	VI7467-BFB	Injection Date:	06/01/13
Lab File ID:	I184800.D	Injection Time:	07:11
Instrument ID:	GCMSI		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
50	15.0 - 40.0% of mass 95	12544	20.1	Pass
75	30.0 - 60.0% of mass 95	32488	52.0	Pass
95	Base peak, 100% relative abundance	62533	100.0	Pass
96	5.0 - 9.0% of mass 95	4304	6.88	Pass
173	Less than 2.0% of mass 174	0	0.00	(0.00) <sup>a</sup> Pass
174	50.0 - 120.0% of mass 95	50496	80.8	Pass
175	5.0 - 9.0% of mass 174	4170	6.67	(8.26) <sup>a</sup> Pass
176	95.0 - 101.0% of mass 174	48594	77.7	(96.2) <sup>a</sup> Pass
177	5.0 - 9.0% of mass 176	3496	5.59	(7.19) <sup>b</sup> Pass

(a) Value is % of mass 174

(b) Value is % of mass 176

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
VI7467-CC7422	I184801.D	06/01/13	07:45	00:34	Continuing cal 20
VI7466-MB2	I184803.D	06/01/13	08:48	01:37	Method Blank
VI7466-MB2	I184803.D	06/01/13	08:48	01:37	Method Blank
JB38328-1DUP	I184804.D	06/01/13	09:23	02:12	Duplicate
JB38328-2MS	I184805.D	06/01/13	09:57	02:46	Matrix Spike
JB38328-3DUP	I184807.D	06/01/13	11:00	03:49	Duplicate
VI7467-MB	I184808.D	06/01/13	11:29	04:18	Method Blank
VI7467-BS	I184809.D	06/01/13	12:06	04:55	Blank Spike
JB38251-2	I184811.D	06/01/13	13:07	05:56	AOI-5_MW-434_0-2'_52913
JB38251-3	I184812.D	06/01/13	13:36	06:25	AOI-5_MW-442_0-2'_052913
ZZZZZZ	I184813.D	06/01/13	14:05	06:54	(unrelated sample)
JB38152-2	I184814.D	06/01/13	14:34	07:23	(used for QC only; not part of job JB38251)
JB38251-3MS	I184815.D	06/01/13	15:03	07:52	Matrix Spike
JB38152-2DUP	I184817.D	06/01/13	16:01	08:50	Duplicate
ZZZZZZ	I184818.D	06/01/13	16:30	09:19	(unrelated sample)
ZZZZZZ	I184819.D	06/01/13	16:59	09:48	(unrelated sample)
ZZZZZZ	I184820.D	06/01/13	17:28	10:17	(unrelated sample)
ZZZZZZ	I184821.D	06/01/13	17:57	10:46	(unrelated sample)
ZZZZZZ	I184822.D	06/01/13	18:26	11:15	(unrelated sample)
ZZZZZZ	I184823.D	06/01/13	18:55	11:44	(unrelated sample)

# Volatile Internal Standard Area Summary

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Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VD8559-CC8524	Injection Date:	06/05/13
Lab File ID:	D209714.D	Injection Time:	21:15
Instrument ID:	GCMSD	Method:	SW846 8260B

	IS 1 AREA	IS 2 RT	IS 2 AREA	IS 3 RT	IS 3 AREA	IS 4 RT	IS 4 AREA	IS 5 RT	IS 5 AREA	IS 5 RT
Check Std	96807	8.00	209702	10.22	275836	11.13	252519	14.48	158008	17.06
Upper Limit <sup>a</sup>	193614	8.50	419404	10.72	551672	11.63	505038	14.98	316016	17.56
Lower Limit <sup>b</sup>	48404	7.50	104851	9.72	137918	10.63	126260	13.98	79004	16.56
Lab Sample ID	IS 1 AREA	IS 2 RT	IS 2 AREA	IS 3 RT	IS 3 AREA	IS 4 RT	IS 4 AREA	IS 5 RT	IS 5 AREA	IS 5 RT
VD8559-MB	64999	8.00	199377	10.22	261906	11.13	242814	14.47	151198	17.06
VD8559-BS	94446	7.99	202895	10.22	266860	11.13	244255	14.47	154837	17.06
JB38485-1MS	98118	8.00	203960	10.22	265825	11.13	242600	14.47	152836	17.06
JB38485-1MSD	79699	7.99	206023	10.22	269600	11.13	249723	14.47	151469	17.06
JB38485-1	76086	8.00	198729	10.22	260168	11.13	239593	14.48	145177	17.06
ZZZZZZ	73058	7.99	195143	10.22	251053	11.13	238905	14.47	145031	17.06
ZZZZZZ	68819	7.99	191082	10.22	254050	11.13	230829	14.48	141501	17.06
ZZZZZZ	76507	7.99	188032	10.22	248812	11.13	231933	14.48	142420	17.06
ZZZZZZ	62574	7.99	188402	10.22	248330	11.13	231610	14.48	156343	17.06
ZZZZZZ	86633	8.00	213877	10.22	279690	11.13	260123	14.48	161438	17.06
ZZZZZZ	92490	7.99	217134	10.22	287196	11.13	261775	14.47	167040	17.06
ZZZZZZ	85323	7.99	216155	10.22	280671	11.13	263378	14.48	166883	17.06
JB38251-1	106966	8.01	215226	10.21	285896	11.13	267161	14.48	192396	17.06
ZZZZZZ	92070	8.00	214309	10.22	283441	11.13	262618	14.48	172528	17.06
ZZZZZZ	112967	8.01	216687	10.22	289669	11.13	274016	14.48	176005	17.06
ZZZZZZ	106371	8.00	222410	10.22	295098	11.13	282155	14.48	174680	17.06
ZZZZZZ	108274	8.00	215581	10.22	286349	11.13	261980	14.48	159458	17.06

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VD8566-CC8524	Injection Date:	06/10/13
Lab File ID:	D209861.D	Injection Time:	10:09
Instrument ID:	GCMSD	Method:	SW846 8260B

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Check Std	104190	7.99	199477	10.21	258794	11.13
Upper Limit <sup>a</sup>	208380	8.49	398954	10.71	517588	11.63
Lower Limit <sup>b</sup>	52095	7.49	99739	9.71	129397	10.63

Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
VD8566-MB	88251	8.01	188527	10.22	248722	11.13
ZZZZZZ	88251	8.01	188527	10.22	248722	11.13
VD8566-BS	95784	7.99	190496	10.21	248855	11.13
ZZZZZZ	95546	8.00	192900	10.22	247465	11.13
ZZZZZZ	69706	7.99	195235	10.22	256447	11.13
ZZZZZZ	100661	8.00	205548	10.22	266866	11.13
ZZZZZZ	106885	8.00	213222	10.22	280877	11.13
ZZZZZZ	104216	8.00	211118	10.22	282785	11.13
JB38251-1 <sup>c</sup>	103928	7.99	220843	10.22	291323	11.13
JB38251-4	121475	8.01	220275	10.22	295264	11.13
JB38570-10MS	96559	8.00	222463	10.22	290910	11.13
JB38570-10MSD	101095	7.99	222382	10.22	296787	11.13
JB38570-10	99067	7.99	218912	10.22	287489	11.13
ZZZZZZ	78683	7.99	210698	10.22	281779	11.13

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

(c) Confirmation run for surrogate recoveries.

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VD8568-CC8524	Injection Date:	06/11/13
Lab File ID:	D209913A.D	Injection Time:	13:52
Instrument ID:	GCMSD	Method:	SW846 8260B

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Check Std	81468	8.00	171701	10.22	219498	11.14
Upper Limit <sup>a</sup>	162936	8.50	343402	10.72	438996	11.64
Lower Limit <sup>b</sup>	40734	7.50	85851	9.72	109749	10.64

Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
ZZZZZZ	85350	8.01	173893	10.22	227392	11.14
VD8568-MB	85350	8.01	173893	10.22	227392	11.14
VD8568-BS	81979	7.99	173697	10.22	232576	11.14
ZZZZZZ	81367	8.00	176311	10.22	230367	11.13
JB38487-9	75534	7.99	192557	10.22	252500	11.13
JB38487-9MS	75129	7.99	212846	10.22	281260	11.13
JB38487-9MSD	65112	7.99	219024	10.22	286532	11.13
ZZZZZZ	107898	7.99	226125	10.22	298236	11.14
JB38251-4 <sup>c</sup>	108372	7.99	223902	10.22	296662	11.14
ZZZZZZ	95825	8.00	221426	10.22	290524	11.13
ZZZZZZ	97463	7.99	218326	10.22	290449	11.13
ZZZZZZ	85337	8.00	219724	10.22	293164	11.13
ZZZZZZ	94640	7.99	222946	10.22	292954	11.13
ZZZZZZ	116905	8.00	218922	10.22	286485	11.13
ZZZZZZ	101587	8.00	222273	10.22	297235	11.13
ZZZZZZ	82900	7.99	215654	10.22	285729	11.13
ZZZZZZ	111275	7.99	220421	10.22	291765	11.14

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

(c) Confirmation run for surrogate recoveries.

# Volatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	VI7467-CC7422		Injection Date:	06/01/13						
Lab File ID:	I184801.D		Injection Time:	07:45						
Instrument ID:	GCMSI		Method:	SW846 8260B						

	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
Check Std	85696	7.17	235397	9.43	328576	10.36
Upper Limit <sup>a</sup>	171392	7.67	470794	9.93	657152	10.86
Lower Limit <sup>b</sup>	42848	6.67	117699	8.93	164288	9.86

Lab Sample ID	IS 1 AREA	IS 2 AREA	IS 3 AREA	IS 4 AREA	IS 5 AREA	
VI7466-MB2	56031	7.18	196506	9.44	275802	10.36
VI7466-MB2	56031	7.18	196506	9.44	275802	10.36
JB38328-1DUP	96258	7.18	183189	9.43	259477	10.36
JB38328-2MS	46417	7.18	208976	9.43	296026	10.36
JB38328-3DUP	99815	7.17	201256	9.43	286166	10.36
VI7467-MB	59031	7.18	204956	9.44	287524	10.36
VI7467-BS	81476	7.18	193969	9.43	275665	10.36
JB38251-2	64592	7.18	191359	9.44	272297	10.36
JB38251-3	70567	7.18	199171	9.44	279147	10.36
ZZZZZZ	79331	7.18	191561	9.44	269839	10.36
JB38152-2	72131	7.19	199956	9.44	288712	10.36
JB38251-3MS	46243	7.18	197173	9.44	278974	10.36
JB38152-2DUP	71074	7.18	197870	9.44	282197	10.36
ZZZZZZ	66969	7.18	196917	9.44	282021	10.36
ZZZZZZ	67894	7.18	195420	9.44	276082	10.36
ZZZZZZ	66852	7.18	191359	9.44	274110	10.36
ZZZZZZ	74365	7.18	191638	9.44	270438	10.36
ZZZZZZ	72165	7.18	188217	9.44	266852	10.36
ZZZZZZ	67604	7.18	194849	9.44	270954	10.36

IS 1 = Tert Butyl Alcohol-D9

IS 2 = Pentafluorobenzene

IS 3 = 1,4-Difluorobenzene

IS 4 = Chlorobenzene-D5

IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB38251

Account: AQTAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8260B

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JB38251-1	D209871.D	90.0	93.0	100.0	107.0
JB38251-1	D209729.D	90.0	94.0	120.0	175.0* a
JB38251-2	I184811.D	96.0	115.0	100.0	123.0
JB38251-3	I184812.D	94.0	114.0	97.0	109.0
JB38251-4	D209922.D	102.0	107.0	110.0	106.0
JB38251-4	D209872.D	91.0	99.0	131.0* a	92.0
JB38152-2DUP	I184817.D	96.0	116.0	99.0	116.0
JB38251-3MS	I184815.D	91.0	102.0	99.0	107.0
JB38485-1MS	D209718.D	90.0	93.0	95.0	89.0
JB38485-1MSD	D209719.D	88.0	94.0	95.0	90.0
JB38570-10MS	D209874.D	91.0	92.0	99.0	89.0
JB38570-10MSD	D209875.D	92.0	94.0	96.0	95.0
VD8559-BS	D209717.D	90.0	98.0	95.0	88.0
VD8559-MB	D209716.D	89.0	94.0	93.0	89.0
VD8566-BS	D209864.D	90.0	99.0	93.0	90.0
VD8566-MB	D209863.D	90.0	97.0	93.0	93.0
VI7467-BS	I184809.D	97.0	117.0	97.0	104.0
VI7467-MB	I184808.D	94.0	109.0	99.0	110.0

Surrogate Compounds                      Recovery Limits

S1 = Dibromofluoromethane

65-131%

S2 = 1,2-Dichloroethane-D4

70-121%

S3 = Toluene-D8

80-128%

S4 = 4-Bromofluorobenzene

67-131%

(a) Outside control limits due to matrix interference. Confirmed by reanalysis.

# Initial Calibration Summary

Page 1 of 5

Job Number: JB38251

Sample: VD8524-ICC8524

Account: AQTAW Aquaterra Technologies, Inc.

Lab FileID: D208875.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Response Factor Report MSD

Method : C:\MSDCHEM\1\METHODS\MD8524.M ( RTE Integrator )

Title : SW-846 Method 8260B

Last Update : Wed May 15 14:00:07 2013

Response via : Initial Calibration

### Calibration Files

5	=d208872.D	2	=d208871.D	0.5	=d208869.D	50	=d208875.D
100	=d208876.D	1	=d208870.D	200	=d208877.D	20	=d208874.D
10	=d208873.D		=				

### Compound

	5	2	0.5	50	100	1	200	20	10	Avg	%RSD
<hr/>											
1) I Tert Butyl Alcohol-d9						-----ISTD-----					
2) 1,4-dioxane			0.079		0.082	0.094		0.102	0.079	0.088	0.087
3) tertiary butyl alcohol			1.146	1.222	1.195	1.214	0.998	1.079	1.175	1.309	1.167
4) I pentafluorobenzene						-----ISTD-----					
5) 1,2-dichloro-1,2,2-trifluoroet										0.000#	-1.00
6) chlorodifluoromethane		0.378	0.410		0.429	0.417	0.334	0.407	0.391	0.372	0.392
7) dichlorodifluoromethane		0.474	0.506		0.550	0.559		0.546	0.505	0.515	0.522
8) chloromethane		0.430	0.460	0.396	0.458	0.483	0.456	0.505	0.430	0.434	0.450
9) vinyl chloride		0.479	0.536	0.570	0.585	0.613	0.458	0.660	0.522	0.513	0.548
10) bromomethane		0.263	0.257	0.290	0.311	0.319	0.270	0.345	0.285	0.292	0.293
11) chloroethane		0.233	0.239	0.247	0.265	0.270	0.179	0.283	0.240	0.258	0.246
12) vinyl bromide										0.000#	-1.00
13) trichlorofluoromethane		0.466	0.574		0.655	0.656		0.683	0.606	0.577	0.602
14) pentane		0.600	0.754		0.601		0.708	0.598	0.642	0.600	0.643
15) ethyl ether		0.248	0.260		0.259	0.244	0.264	0.243	0.237	0.237	0.249
16) acrolein		0.091	0.095		0.091	0.093	0.089	0.104	0.085	0.084	0.091
17) chlorotrifluoroethene										0.000#	-1.00
18) 2-chloropropane		0.705	0.586		0.711	0.667	0.853	0.657	0.668	0.687	0.692
19) 1,1-dichloroethene		0.383	0.337	0.428	0.388	0.361	0.336	0.361	0.358	0.371	0.369
20) acetone		0.034			0.044	0.039		0.037	0.037	0.045	0.039
21) allyl chloride		0.760			0.751	0.681		0.784	0.709	0.657	0.724
22) acetonitrile		0.024	0.033		0.025	0.024		0.022	0.025	0.027	0.026
23) acetaldehyde											13.54

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## Initial Calibration Summary

Page 2 of 5

**Job Number:** JB38251

**Sample:** VD8524-ICC8524

**Account:** AQTPAW Aquaterra Technologies, Inc.

**Lab FileID:** D208875.D

**Project:** Sun-Marcus Hook Refinery, Philadelphia, PA

# Initial Calibration Summary

Page 3 of 5

Job Number: JB38251

Sample: VD8524-ICC8524

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: D208875.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

52)	tert-amyl methyl ether	1.372	1.163	1.244	1.434	1.391	1.109	1.352	1.311	1.354	1.303	8.38
53)	I 1,4-difluorobenzene											
54)	cyclohexane	0.404	0.372		0.465	0.475	0.325	0.438	0.431	0.433	0.418	11.86
55)	tert amyl alcohol	0.012			0.014	0.013		0.012	0.012	0.014	0.013	8.58
56)	2,2,4-trimethylpentane	0.910	0.856		1.068	1.102	0.941	0.973	0.906	0.826	0.948	10.19
57)	epichlorohydrin	0.032			0.036	0.035	0.024	0.034	0.033	0.033	0.032	12.44
58)	n-butyl alcohol	0.009	0.008		0.010	0.010		0.010	0.009	0.009	0.009#	8.33
59)	carbon tetrachloride	0.416	0.349		0.473	0.461	0.325	0.436	0.426	0.412	0.412	12.42
60)	1,1-dichloropropene	0.416	0.353	0.277	0.431	0.423	0.303	0.410	0.398	0.383	0.377	14.55
61)	hexane	0.344	0.335	0.334	0.368	0.377	0.391	0.336	0.323	0.286	0.344	9.17
62)	benzene	1.174	1.001	0.807	1.242	1.209	1.198	1.185	1.141	1.129	1.121	12.17
63)	heptane	0.203	0.184		0.211	0.218	0.171	0.193	0.194	0.176	0.194	8.60
64)	isopropyl acetate	0.569	0.587	0.621	0.629	0.615	0.545	0.584	0.589	0.600	0.593	4.47
65)	1,2-dichloroethane	0.432	0.351		0.468	0.449	0.325	0.431	0.431	0.432	0.415	11.97
66)	Ethyl Acrylate	0.389	0.323		0.435	0.416	0.280	0.416	0.405	0.399	0.383	13.96
67)	trichloroethene	0.294	0.255	0.226	0.314	0.309	0.239	0.301	0.286	0.299	0.280	11.48
68)	2-nitropropane	0.615	0.448		0.646	0.623		0.655	0.553	0.527	0.581	12.93
69)	2-chloroethyl vinyl ether	0.143	0.121		0.153	0.154		0.163	0.136	0.130	0.143	10.30
70)	methyl methacrylate	0.085	0.066		0.103	0.103		0.097	0.090	0.089	0.090	14.30
71)	tert-amyl ethyl ether	0.493	0.442	0.445	0.555	0.527	0.461	0.530	0.504	0.506	0.496	7.97
72)	1,2-dichloropropane	0.301	0.227	0.232	0.321	0.313	0.230	0.302	0.285	0.285	0.277	13.51
73)	methylcyclohexane	0.468	0.419		0.528	0.541	0.437	0.480	0.466	0.426	0.470	9.50
74)	dibromomethane	0.180	0.148		0.202	0.195	0.133	0.188	0.184	0.184	0.177	13.49
75)	bromodichloromethane	0.406	0.345		0.443	0.428	0.305	0.428	0.403	0.407	0.396	11.82
76)	cis-1,3-dichloropropene	0.517	0.431		0.563	0.532	0.389	0.521	0.503	0.518	0.497	11.56
77)	toluene-d8 (s)	1.029	0.945		1.126	1.080	0.971	1.056	1.047	1.022	1.034	5.58
78)	4-methyl-2-pentanone	0.111			0.141	0.128		0.129	0.126	0.122	0.126	7.62
79)	toluene	0.768	0.646	0.529	0.833	0.782	0.645	0.763	0.752	0.754	0.719	13.09
80)	3-methyl-1-butanol	0.007	0.006		0.011	0.011		0.011	0.009	0.009	0.009#	19.22
		----- Linear regression ----- Coefficient = 0.9997										
		Response Ratio = -0.00512 + 0.01061 *A										

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# Initial Calibration Summary

Page 4 of 5

Job Number: JB38251

Sample: VD8524-ICC8524

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: D208875.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

81)	trans-1,3-dichloropropene		0.474	0.355	0.540	0.509	0.368	0.498	0.470	0.478	0.462	14.23	
82)	ethyl methacrylate		0.413	0.324	0.479	0.446		0.441	0.415	0.440	0.423	11.51	
83)	1,1,2-trichloroethane		0.220	0.179	0.243	0.228	0.175	0.225	0.219	0.215	0.213	11.20	
84)	2-hexanone		0.093		0.122	0.117		0.118	0.101	0.128	0.113	11.63	
85)	I chlorobenzene-d5												
86)	tetrachloroethene		0.424	0.361	0.320	0.459	0.437	0.333	0.436	0.433	0.437	0.405	12.77
87)	1,3-dichloropropane		0.499	0.431	0.578	0.545	0.378	0.539	0.527	0.549	0.506	13.39	
88)	butyl acetate		0.199		0.240	0.232		0.234	0.212	0.215	0.222	7.09	
89)	3,3-dimethyl-1-butanol		0.033	0.033	0.038	0.040		0.042	0.033	0.032	0.036	11.67	
90)	dibromochloromethane		0.358	0.305	0.429	0.411	0.305	0.410	0.386	0.398	0.375	12.76	
91)	1,2-dibromoethane		0.305	0.236	0.354	0.335		0.332	0.317	0.336	0.316	12.21	
92)	chlorobenzene		0.936	0.836	1.049	1.020	0.694	0.984	0.961	0.964	0.930	12.30	
93)	1,1,1,2-tetrachloroethane		0.350	0.316	0.409	0.402	0.311	0.389	0.377	0.381	0.367	10.19	
94)	ethylbenzene		1.489	1.317	1.199	1.683	1.662	1.323	1.615	1.573	1.565	1.492	11.55
95)	m,p-xylene		0.617	0.551	0.467	0.709	0.695	0.516	0.677	0.658	0.668	0.617	13.97
96)	o-xylene		0.620	0.530	0.477	0.706	0.686	0.501	0.692	0.648	0.645	0.612	14.22
97)	styrene		1.004	0.921	1.197	1.164	0.845	1.186	1.069	1.092	1.060	12.10	
98)	bromoform		0.290	0.262	0.347	0.336		0.332	0.311	0.322	0.314	9.44	
99)	I 1,4-dichlorobenzene-d												
100)	isopropylbenzene		2.816	2.436	2.430	2.897	2.751	2.515	2.652	2.740	2.773	2.668	6.38
101)	4-bromofluorobenzene (s)		0.693	0.726	0.779	0.761	0.673	0.736	0.763	0.759	0.736	5.07	
102)	bromobenzene		0.777	0.639	0.609	0.828	0.790	0.627	0.789	0.778	0.799	0.737	11.64
103)	cyclohexanone		0.053	0.068	0.046	0.071		0.063	0.073	0.085	0.066	19.70	
												Coefficient = 0.9894	
												Response Ratio = -0.01071 + 0.06723 *A + -0.00009 *A^2	
104)	1,1,2,2-tetrachloroethane		0.756	0.694	0.647	0.765	0.721	0.728	0.690	0.709	0.766	0.719	5.48
105)	trans-1,4-dichloro-2-butene		0.176	0.131	0.205	0.208		0.204	0.187	0.190	0.186	14.35	
106)	1,2,3-trichloropropane		0.219	0.200	0.234	0.224	0.188	0.219	0.220	0.238	0.218	7.68	
107)	n-propylbenzene		3.035	2.724	2.407	3.197	3.071	2.547	3.077	3.066	3.006	2.903	9.47
108)	p-ethyltoluene		2.536	2.376	2.772	2.633	2.269	2.734	2.667	2.572	2.570	6.74	

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# Initial Calibration Summary

Page 5 of 5

Job Number: JB38251

Sample: VD8524-ICC8524

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: D208875.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

109)	2-chlorotoluene		0.658	0.614	0.733	0.704	0.581	0.685	0.685	0.673	0.667	7.33	
110)	4-chlorotoluene		1.978	1.928	2.087	1.984	1.912	1.951	1.994	1.966	1.975	2.70	
111)	1,3,5-trimethylbenzene		2.568	2.259	2.972	2.549	2.477	2.378	2.340	2.426	2.482	2.495	8.20
112)	tert-butylbenzene		2.179	1.950	1.803	2.316	2.245	1.913	2.182	2.209	2.161	2.106	8.25
113)	pentachloroethane		0.529	0.512	0.536	0.579	0.562	0.466	0.550	0.530	0.540	0.534	6.05
114)	1,2,4-trimethylbenzene		2.467	2.265	2.122	2.584	2.511	2.254	2.430	2.433	2.434	2.389	6.10
115)	sec-butylbenzene		3.102	2.787	2.485	3.179	3.114	2.699	3.002	3.001	2.953	2.925	7.73
116)	1,3-dichlorobenzene		1.397	1.306	1.186	1.547	1.497	1.274	1.439	1.438	1.438	1.391	8.24
117)	p-isopropyltoluene		2.645	2.432	1.970	2.804	2.763	2.251	2.628	2.611	2.565	2.519	10.51
118)	1,4-dichlorobenzene		1.488	1.382	1.457	1.604	1.554	1.498	1.495	1.521	1.536	1.504	4.15
119)	Benzyl Chloride		1.261	1.203		1.447	1.457	1.035	1.382	1.281	1.173	1.280	11.34
120)	p-diethylbenzene		1.498	1.496		1.744	1.665	1.410	1.632	1.586	1.512	1.568	6.95
121)	1,2-dichlorobenzene		1.432	1.290	1.153	1.541	1.490	1.254	1.391	1.412	1.420	1.376	8.86
122)	n-butylbenzene		1.128	1.002		1.360	1.357	0.958	1.263	1.253	1.158	1.185	12.78
123)	1,2,4,5-tetramethylbenzene		2.226	2.193	2.337	2.721	2.562	1.943	2.391	2.433	2.250	2.339	9.62
124)	1,2-dibromo-3-chloropropane		0.136	0.161	0.119	0.147	0.147	0.109	0.132	0.140	0.137	0.136	11.27
125)	1,3,5-trichlorobenzene		1.038	0.865		1.239	1.197		1.073	1.138	1.026	1.082	11.53
126)	1,2,4-trichlorobenzene		0.680			0.984	0.972		0.913	0.830	0.735	0.852	14.79
127)	hexachlorobutadiene		0.534	0.474		0.598	0.566	0.438	0.522	0.554	0.504	0.524	9.85
128)	naphthalene		1.227			1.884	1.876		1.811	1.513	1.319	1.605	18.20
			-----	Linear regression	-----	Coefficient =	0.9990						
						Response Ratio =	-0.05237 + 1.84228 *A						
129)	1,2,3-trichlorobenzene		0.560		0.792	0.794		0.764	0.674	0.588	0.695	15.00	
			-----	Linear regression	-----	Coefficient =	0.9991						
						Response Ratio =	-0.01528 + 0.77576 *A						
130)	hexachloroethane		0.509	0.491		0.536	0.531	0.559	0.499	0.502	0.475	0.513	5.33

(#) = Out of Range   ### Number of calibration levels exceeded format   ###

MD8524.M

Wed May 15 14:01:41 2013

**Initial Calibration Verification**

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VD8524-ICV8524

Lab FileID: D208880.D

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\d208880.D Vial: 13  
 Acq On : 14 May 2013 11:31 pm Operator: EmilyT  
 Sample : icv8524-50 Inst : MSD  
 Misc : ms48015, vd8524, 5,,100,5,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MD8524.M (RTE Integrator)  
 Title : SW-846 Method 8260B  
 Last Update : Wed May 15 14:00:07 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.	
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	103	0.00	7.99	
2 M	1,4-dioxane	0.087	0.085	2.3	106	0.00	11.86	
3 M	tertiary butyl alcohol	1.167	1.228	-5.2	106	0.00	8.11	
4 I	pentafluorobenzene	1.000	1.000	0.0	104	0.00	10.22	
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----				
6 M	chlorodifluoromethane	0.392	0.468	-19.4	114	0.00	4.55	
7 M	dichlorodifluoromethane	0.522	0.536	-2.7	102	-0.01	4.54	
8 M	chloromethane	0.450	0.500	-11.1	114	0.00	4.88	
9 M	vinyl chloride	0.548	0.620	-13.1	111	0.00	5.17	
10 M	bromomethane	0.293	0.317	-8.2	106	0.00	5.84	
11 M	chloroethane	0.246	0.272	-10.6	108	0.00	6.02	
12 M	vinyl bromide			-----NA-----				
13 M	trichlorofluoromethane	0.602	0.680	-13.0	108	0.00	6.53	
14	pentane	0.643	0.615	4.4	107	0.00	6.62	
15 M	ethyl ether	0.249	0.263	-5.6	106	0.00	6.93	
16 M	acrolein	0.091	0.093	-2.2	107	0.00	7.15	
17 M	chlorotrifluoroethylene			-----NA-----				
18 M	2-chloropropane	0.692	0.693	-0.1	102	0.00	7.12	
19 M	1,1-dichloroethene	0.369	0.392	-6.2	106	0.00	7.36	
20 M	acetone	0.039	0.040	-2.6	96	0.00	7.37	
21 M	allyl chloride	0.724	0.709	2.1	99	0.00	7.87	
22 M	acetonitrile	0.026	0.024	7.7	98	0.00	7.79	
23 M	acetaldehyde			-----NA-----				
24 M	iodomethane	0.691	0.776	-12.3	103	0.00	7.62	
25 M	iso-butyl alcohol			-----NA-----				
26 M	carbon disulfide	1.172	1.311	-11.9	106	0.00	7.76	
27 M	methylene chloride	0.409	0.424	-3.7	99	0.00	8.04	
28 M	1-chloropropane	0.657	0.710	-8.1	102	0.00	8.10	
29 M	methyl acetate	0.346	0.322	6.9	98	0.00	7.84	
30 M	methyl tert butyl ether	1.259	1.373	-9.1	100	0.00	8.40	
31 M	trans-1,2-dichloroethene	0.422	0.425	-0.7	101	0.00	8.43	
32 M	di-isopropyl ether	1.232	1.321	-7.2	101	0.00	9.00	
33 M	ethyl tert-butyl ether	1.275	1.363	-6.9	100	0.00	9.46	
34 M	2-butanone	50.000	48.999	True	Calc.	% Drift		
35 M	1,1-dichloroethane	0.690	0.753	-9.1	104	0.00	8.98	
36 M	chloroprene	0.582	0.599	-2.9	97	0.00	9.10	
37 M	acrylonitrile	0.147	0.167	-13.6	102	0.00	8.34	

**Initial Calibration Verification**

Job Number: JB38251

Sample: VD8524-ICV8524

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: D208880.D

38 M	vinyl acetate	0.089	0.087	2.2	93	0.00	8.97
39 M	ethyl acetate	0.063	0.063	0.0	95	0.00	9.70
40 M	2,2-dichloropropane	0.603	0.597	1.0	95	0.00	9.73
41 M	cis-1,2-dichloroethene	0.446	0.453	-1.6	102	0.00	9.70
42 M	propionitrile	0.060	0.063	-5.0	100	0.00	9.74
43 M	bromochloromethane	0.225	0.234	-4.0	101	0.00	10.00
44 M	tetrahydrofuran	0.058	0.058	0.0	100	0.00	10.07
45 M	chloroform	0.677	0.718	-6.1	100	0.00	10.06
46 S	dibromofluoromethane (s)	0.373	0.395	-5.9	104	0.00	10.25
47 S	1,2-dichloroethane-d4 (s)	0.464	0.483	-4.1	100	0.00	10.68
48 M	freon 113	0.270	0.275	-1.9	94	0.00	7.35
49 M	methacrylonitrile	0.260	0.258	0.8	98	0.00	9.94
50 m	t-butyl formate	0.387	0.441	-14.0	103	0.00	10.13
51 M	1,1,1-trichloroethane	0.616	0.691	-12.2	105	0.00	10.35
52 M	tert-amyl methyl ether	1.303	1.400	-7.4	102	0.00	10.83
53 I	1,4-difluorobenzene	1.000	1.000	0.0	103	0.00	11.14
54 M	cyclohexane	0.418	0.445	-6.5	99	0.00	10.44
55	tert amyl alcohol	0.013	0.013	0.0	96	0.00	10.63
56 M	2,2,4-trimethylpentane	0.948	0.873	7.9	84	0.00	10.83
57 M	epichlorohydrin	0.032	0.035	-9.4	103	0.00	12.39
58 M	n-butyl alcohol	0.009	0.010#	-11.1	104	0.00	11.23
59 M	carbon tetrachloride	0.412	0.454	-10.2	99	0.00	10.56
60 M	1,1-dichloropropene	0.377	0.423	-12.2	101	0.00	10.52
61 M	hexane	0.344	0.320	7.0	90	0.00	8.76
62 M	benzene	1.121	1.215	-8.4	101	0.00	10.78
63 M	heptane	0.194	0.164	15.5	80	0.00	10.99
64 M	isopropyl acetate	0.593	0.583	1.7	96	0.00	10.69
65 M	1,2-dichloroethane	0.415	0.447	-7.7	98	0.00	10.77
66	Ethyl Acrylate	0.383	0.433	-13.1	103	0.00	11.48
67 M	trichloroethene	0.280	0.311	-11.1	102	0.00	11.49
68 M	2-nitropropane	0.581	0.641	-10.3	102	0.00	12.28
69 M	2-chloroethyl vinyl ether	0.143	0.153	-7.0	103	0.00	12.28
70 M	methyl methacrylate	0.090	0.101	-12.2	101	0.00	11.76
71 M	tert-amyl ethyl ether	0.496	0.545	-9.9	101	0.00	11.68
72 M	1,2-dichloropropene	0.277	0.316	-14.1	102	0.00	11.75
73 M	methylcyclohexane	0.470	0.481	-2.3	94	0.00	11.75
74 M	dibromomethane	0.177	0.192	-8.5	98	0.00	11.90
75 M	bromodichloromethane	0.396	0.439	-10.9	102	0.00	12.03
76 M	cis-1,3-dichloropropene	0.497	0.536	-7.8	98	0.00	12.51
77 S	toluene-d8 (s)	1.034	1.126	-8.9	103	0.00	12.84
78 M	4-methyl-2-pentanone	0.126	0.132	-4.8	96	0.00	12.62
79 M	toluene	0.719	0.801	-11.4	99	0.00	12.92
----- True Calc. % Drift -----							
80 M	3-methyl-1-butanol	1000.000	995.844	0.4	98	0.00	12.62
----- AvgRF CCRF % Dev -----							
81 M	trans-1,3-dichloropropene	0.462	0.518	-12.1	99	0.00	13.10
82 M	ethyl methacrylate	0.423	0.457	-8.0	98	0.00	13.12
83 M	1,1,2-trichloroethane	0.213	0.233	-9.4	99	0.00	13.33
84 M	2-hexanone	0.113	0.113	0.0	96	0.00	13.53
85 I	chlorobenzene-d5	1.000	1.000	0.0	102	0.00	14.48
86 M	tetrachloroethene	0.405	0.450	-11.1	100	0.00	13.56
87 M	1,3-dichloropropane	0.506	0.549	-8.5	97	0.00	13.53
88 M	butyl acetate	0.222	0.223	-0.5	95	0.00	13.62
89 m	3,3-dimethyl-1-butanol	0.036	0.036	0.0	95	0.00	13.71
90 M	dibromochloromethane	0.375	0.419	-11.7	100	0.00	13.82
91 M	1,2-dibromoethane	0.316	0.336	-6.3	97	0.00	13.99

**Initial Calibration Verification**

Job Number: JB38251

Sample: VD8524-ICV8524

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: D208880.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

92 M	chlorobenzene	0.930	1.019	-9.6	99	0.00	14.51
93 M	1,1,1,2-tetrachloroethane	0.367	0.402	-9.5	100	0.00	14.58
94 M	ethylbenzene	1.492	1.642	-10.1	99	0.00	14.59
95 M	m,p-xylene	0.617	0.708	-14.7	102	0.00	14.71
96 M	o-xylene	0.612	0.685	-11.9	99	0.00	15.17
97 M	styrene	1.060	1.156	-9.1	98	0.00	15.17
98 M	bromoform	0.314	0.336	-7.0	99	0.00	15.44
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	102	0.00	17.06
100 M	isopropylbenzene	2.668	2.813	-5.4	99	0.00	15.55
101 S	4-bromofluorobenzene (s)	0.736	0.756	-2.7	99	0.00	15.76
102 M	bromobenzene	0.737	0.793	-7.6	98	0.00	15.98
-----		True	Calc.	% Drift	-----		
103 M	cyclohexanone	500.000	393.773	21.2#	114	0.00	15.71
-----		AvgRF	CCRF	% Dev	-----		
104 M	1,1,2,2-tetrachloroethane	0.719	0.728	-1.3	97	0.00	15.85
105 M	trans-1,4-dichloro-2-bute	0.186	0.197	-5.9	98	0.00	15.90
106 M	1,2,3-trichloropropane	0.218	0.231	-6.0	101	0.00	15.94
107 M	n-propylbenzene	2.903	3.117	-7.4	100	0.00	16.01
108 M	p-ethyltoluene	2.570	2.785	-8.4	103	0.00	16.12
109 M	2-chlorotoluene	0.667	0.716	-7.3	100	0.00	16.17
110 M	4-chlorotoluene	1.975	1.982	-0.4	97	0.00	16.28
111 M	1,3,5-trimethylbenzene	2.495	2.526	-1.2	101	0.00	16.18
112 M	tert-butylbenzene	2.106	2.267	-7.6	100	0.00	16.57
113 M	pentachloroethane	0.534	0.552	-3.4	98	0.00	16.64
114 M	1,2,4-trimethylbenzene	2.389	2.505	-4.9	99	0.00	16.62
115 M	sec-butylbenzene	2.925	3.132	-7.1	101	0.00	16.81
116 M	1,3-dichlorobenzene	1.391	1.505	-8.2	100	0.00	17.00
117 M	p-isopropyltoluene	2.519	2.790	-10.8	102	0.00	16.94
118 M	1,4-dichlorobenzene	1.504	1.571	-4.5	100	0.00	17.09
119	Benzyl Chloride	1.280	1.315	-2.7	93	0.00	17.22
120 M	p-diethylbenzene	1.568	1.782	-13.6	105	0.00	17.37
121 M	1,2-dichlorobenzene	1.376	1.500	-9.0	100	0.00	17.53
122 M	n-butylbenzene	1.185	1.349	-13.8	102	0.00	17.40
123 M	1,2,4,5-tetramethylbenzen	2.339	2.753	-17.7	104	0.00	18.24
124 M	1,2-dibromo-3-chloropropane	0.136	0.146	-7.4	102	0.00	18.37
125 M	1,3,5-trichlorobenzene	1.082	1.240	-14.6	103	0.00	18.61
126 M	1,2,4-trichlorobenzene	0.852	0.968	-13.6	101	0.00	19.34
127 M	hexachlorobutadiene	0.524	0.611	-16.6	105	0.00	19.49
-----		True	Calc.	% Drift	-----		
128 M	naphthalene	50.000	50.360	-0.7	98	0.00	19.65
129 M	1,2,3-trichlorobenzene	50.000	50.981	-2.0	100	0.00	19.94
-----		AvgRF	CCRF	% Dev	-----		
130 M	hexachloroethane	0.513	0.528	-2.9	101	0.00	17.84
-----							

(##) = Out of Range  
d208875.D MD8524.MSPCC's out = 0 CCC's out = 0  
Wed May 15 14:02:07 2013

# Continuing Calibration Summary

Page 1 of 3

Job Number: JB38251

Sample: VD8559-CC8524

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: D209714.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\d209714.D Vial: 69  
 Acq On : 5 Jun 2013 9:15 pm Operator: EmilyT  
 Sample : cc8524-50 Inst : MSD  
 Misc : ms48988, vd8559, 5,,100,5,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\METHODS\MD8524.M (RTE Integrator)  
 Title : SW-846 Method 8260B  
 Last Update : Thu Jun 06 07:36:20 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.	
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	105	0.00	8.00	
2 M	1,4-dioxane	0.087	0.078	10.3	99	0.00	11.86	
3 M	tertiary butyl alcohol	1.167	1.228	-5.2	108	0.00	8.11	
4 I	pentafluorobenzene	1.000	1.000	0.0	106	0.00	10.22	
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----				
6 M	chlorodifluoromethane	0.392	0.439	-12.0	108	-0.05	4.50	
7 M	dichlorodifluoromethane	0.522	0.543	-4.0	105	-0.03	4.52	
8 M	chloromethane	0.450	0.495	-10.0	115	0.00	4.89	
9 M	vinyl chloride	0.548	0.544	0.7	99	0.00	5.17	
10 M	bromomethane	0.293	0.306	-4.4	104	0.00	5.84	
11 M	chloroethane	0.246	0.252	-2.4	101	0.00	6.02	
12 M	vinyl bromide			-----NA-----				
13 M	trichlorofluoromethane	0.602	0.740	-22.9#	120	-0.05	6.48	
14	pentane			-----NA-----				
15 M	ethyl ether	0.249	0.201	19.3	83	0.00	6.93	
16 M	acrolein	0.091	0.104	-14.3	122	-0.01	7.14	
17 M	chlorotrifluoroethylene			-----NA-----				
18 M	2-chloropropane	0.692	0.596	13.9	89	-0.01	7.12	
19 M	1,1-dichloroethene	0.369	0.359	2.7	98	-0.02	7.35	
20 M	acetone	0.039	0.033	15.4	81	0.00	7.37	
21 M	allyl chloride	0.724	0.662	8.6	94	0.00	7.86	
22 M	acetonitrile	0.026	0.021	19.2	89	0.01	7.80	
23 M	acetaldehyde			-----NA-----				
24 M	iodomethane	0.691	0.689	0.3	93	0.00	7.62	
25 M	iso-butyl alcohol			-----NA-----				
26 M	carbon disulfide	1.172	1.087	7.3	89	-0.01	7.75	
27 M	methylene chloride	0.409	0.357	12.7	85	0.00	8.04	
28 M	1-chloropropane	0.657	0.634	3.5	93	0.00	8.09	
29 M	methyl acetate	0.346	0.333	3.8	103	0.00	7.84	
30 M	methyl tert butyl ether	1.259	1.165	7.5	86	0.00	8.40	
31 M	trans-1,2-dichloroethene	0.422	0.360	14.7	87	0.00	8.42	
32 M	di-isopropyl ether	1.232	1.225	0.6	95	0.00	8.99	
33 M	ethyl tert-butyl ether	1.275	1.302	-2.1	98	0.00	9.45	
34 M	2-butanone	50.000	39.678	True	Calc.	% Drift		
				20.6#	79	0.00	9.66	
35 M	1,1-dichloroethane	0.690	0.636	7.8	89	-0.01	8.97	
36 M	chloroprene	0.582	0.639	-9.8	105	0.00	9.10	
37 M	acrylonitrile	0.147	0.136	7.5	84	-0.01	8.33	

## Continuing Calibration Summary

Job Number: JB38251

Sample: VD8559-CC8524

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: D209714.D

38 M	vinyl acetate	0.089	0.074	16.9	81	0.00	8.97
39 M	ethyl acetate	0.063	0.056	11.1	84	-0.01	9.69
40 M	2,2-dichloropropane	0.603	0.473	21.6#	77	0.00	9.73
41 M	cis-1,2-dichloroethene	0.446	0.385	13.7	88	0.00	9.70
42 M	propionitrile	0.060	0.054	10.0	87	0.00	9.74
43 M	bromochloromethane	0.225	0.197	12.4	86	0.00	9.99
44 M	tetrahydrofuran	0.058	0.050	13.8	88	0.00	10.06
45 M	chloroform	0.677	0.637	5.9	90	-0.01	10.05
46 S	dibromofluoromethane (s)	0.373	0.339	9.1	91	0.00	10.25
47 S	1,2-dichloroethane-d4 (s)	0.464	0.432	6.9	91	0.00	10.67
48 M	freon 113	0.270	0.282	-4.4	98	0.01	7.36
49 M	methacrylonitrile	0.260	0.226	13.1	87	0.00	9.94
50 m	t-butyl formate	0.387	0.411	-6.2	98	0.00	10.12
51 M	1,1,1-trichloroethane	0.616	0.582	5.5	90	0.00	10.34
52 M	tert-amyl methyl ether	1.303	1.283	1.5	95	0.00	10.83
53 I	1,4-difluorobenzene	1.000	1.000	0.0	103	0.00	11.13
54 M	cyclohexane	0.418	0.390	6.7	86	0.00	10.44
55	tert amyl alcohol			-----NA-----			
56 M	2,2,4-trimethylpentane	0.948	0.728	23.2#	70	0.00	10.83
57 M	epichlorohydrin	0.032	0.034	-6.3	98	0.00	12.39
58 M	n-butyl alcohol	0.009	0.010#	-11.1	102	0.00	11.23
59 M	carbon tetrachloride	0.412	0.423	-2.7	92	0.00	10.56
60 M	1,1-dichloropropene	0.377	0.375	0.5	89	-0.01	10.52
61 M	hexane	0.344	0.357	-3.8	99	0.00	8.76
62 M	benzene	1.121	1.052	6.2	87	0.00	10.78
63 M	heptane	0.194	0.353	-82.0#	172	0.00	10.98
64 M	isopropyl acetate	0.593	0.575	3.0	94	0.00	10.69
65 M	1,2-dichloroethane	0.415	0.422	-1.7	93	0.00	10.76
66	Ethyl Acrylate			-----NA-----			
67 M	trichloroethene	0.280	0.275	1.8	90	0.00	11.48
68 M	2-nitropropane	0.581	0.605	-4.1	96	0.00	12.28
69 M	2-chloroethyl vinyl ether	0.143	0.139	2.8	94	0.00	12.28
70 M	methyl methacrylate	0.090	0.086	4.4	86	0.00	11.75
71 M	tert-amyl ethyl ether			-----NA-----			
72 M	1,2-dichloropropene	0.277	0.266	4.0	85	0.00	11.75
73 M	methylcyclohexane	0.470	0.488	-3.8	95	0.00	11.75
74 M	dibromomethane	0.177	0.168	5.1	85	-0.01	11.89
75 M	bromodichloromethane	0.396	0.384	3.0	89	0.00	12.02
76 M	cis-1,3-dichloropropene	0.497	0.471	5.2	86	0.00	12.51
77 S	toluene-d8 (s)	1.034	0.987	4.5	90	0.00	12.84
78 M	4-methyl-2-pentanone	0.126	0.115	8.7	84	0.00	12.62
79 M	toluene	0.719	0.708	1.5	87	0.00	12.92
-----				True	Calc.	% Drift	-----
80 M	3-methyl-1-butanol	1000.000	941.661	5.8	92	0.00	12.62
-----				AvgRF	CCRF	% Dev	-----
81 M	trans-1,3-dichloropropene	0.462	0.454	1.7	86	0.00	13.09
82 M	ethyl methacrylate	0.423	0.379	10.4	81	0.00	13.11
83 M	1,1,2-trichloroethane	0.213	0.191	10.3	81	0.00	13.32
84 M	2-hexanone	0.113	0.099	12.4	84	0.00	13.53
85 I	chlorobenzene-d5	1.000	1.000	0.0	104	0.00	14.48
86 M	tetrachloroethene	0.405	0.400	1.2	91	0.00	13.55
87 M	1,3-dichloropropane	0.506	0.467	7.7	84	0.00	13.53
88 M	butyl acetate	0.222	0.217	2.3	94	0.00	13.62
89 m	3,3-dimethyl-1-butanol	0.036	0.032	11.1	88	0.00	13.72
90 M	dibromochloromethane	0.375	0.354	5.6	86	0.00	13.81
91 M	1,2-dibromoethane	0.316	0.286	9.5	84	0.00	13.98

## Continuing Calibration Summary

Job Number: JB38251

Sample: VD8559-CC8524

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: D209714.D

92 M	chlorobenzene	0.930	0.872	6.2	86	0.00	14.51
93 M	1,1,1,2-tetrachloroethane	0.367	0.357	2.7	91	0.00	14.57
94 M	ethylbenzene	1.492	1.446	3.1	89	0.00	14.58
95 M	m,p-xylene	0.617	0.586	5.0	86	0.00	14.70
96 M	o-xylene	0.612	0.586	4.2	86	0.00	15.16
97 M	styrene	1.060	0.990	6.6	86	0.00	15.17
98 M	bromoform	0.314	0.285	9.2	85	0.00	15.43
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	104	0.00	17.06
100 M	isopropylbenzene	2.668	2.470	7.4	89	0.00	15.55
101 S	4-bromofluorobenzene (s)	0.736	0.660	10.3	88	0.00	15.76
102 M	bromobenzene	0.737	0.697	5.4	88	0.00	15.98
-----		True	Calc.	% Drift	-----		
103 M	cyclohexanone	500.000	131.077	73.8#	37	0.00	15.71
-----		AvgRF	CCRF	% Dev	-----		
104 M	1,1,2,2-tetrachloroethane	0.719	0.601	16.4	82	0.00	15.84
105 M	trans-1,4-dichloro-2-bute	0.186	0.190	-2.2	96	0.00	15.90
106 M	1,2,3-trichloropropane	0.218	0.199	8.7	88	0.00	15.93
107 M	n-propylbenzene	2.903	2.742	5.5	89	0.00	16.01
108 M	p-ethyltoluene			-----NA-----			
109 M	2-chlorotoluene	0.667	0.620	7.0	88	0.00	16.16
110 M	4-chlorotoluene	1.975	1.767	10.5	88	0.00	16.27
111 M	1,3,5-trimethylbenzene	2.495	2.118	15.1	86	0.00	16.18
112 M	tert-butylbenzene	2.106	1.919	8.9	86	0.00	16.57
113 M	pentachloroethane	0.534	0.479	10.3	86	0.00	16.64
114 M	1,2,4-trimethylbenzene	2.389	2.191	8.3	88	0.00	16.61
115 M	sec-butylbenzene	2.925	2.701	7.7	88	0.00	16.81
116 M	1,3-dichlorobenzene	1.391	1.304	6.3	88	0.00	17.00
117 M	p-isopropyltoluene	2.519	2.369	6.0	88	0.00	16.94
118 M	1,4-dichlorobenzene	1.504	1.379	8.3	89	0.00	17.09
119	Benzyl Chloride	1.280	1.420	-10.9	102	0.00	17.21
120 M	p-diethylbenzene			-----NA-----			
121 M	1,2-dichlorobenzene	1.376	1.278	7.1	86	0.00	17.52
122 M	n-butylbenzene	1.185	1.144	3.5	87	0.00	17.40
123 M	1,2,4,5-tetramethylbenzen			-----NA-----			
124 M	1,2-dibromo-3-chloropropane	0.136	0.137	-0.7	97	0.00	18.37
125 M	1,3,5-trichlorobenzene	1.082	1.103	-1.9	93	0.00	18.60
126 M	1,2,4-trichlorobenzene	0.852	0.897	-5.3	95	0.00	19.33
127 M	hexachlorobutadiene	0.524	0.584	-11.5	102	0.00	19.49
-----		True	Calc.	% Drift	-----		
128 M	naphthalene	50.000	49.527	0.9	98	0.00	19.65
129 M	1,2,3-trichlorobenzene	50.000	49.402	1.2	99	0.00	19.93
-----		AvgRF	CCRF	% Dev	-----		
130 M	hexachloroethane	0.513	0.442	13.8	86	0.00	17.83
-----							

( # ) = Out of Range  
d208875.D MD8524.MSPCC's out = 0 CCC's out = 0  
Thu Jun 06 08:01:09 2013

## Continuing Calibration Summary

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VD8566-CC8524

Lab FileID: D209861.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\d209861.D Vial: 3  
 Acq On : 10 Jun 2013 10:09 am Operator: EmilyT  
 Sample : cc8524-20 Inst : MSD  
 Misc : ms49324, vd8566,,100,5,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\METHODS\MD8524.M (RTE Integrator)  
 Title : SW-846 Method 8260B  
 Last Update : Tue May 28 12:32:06 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.	
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	115	0.00	7.99	
2 M	1,4-dioxane	0.087	0.081	6.9	117	0.00	11.86	
3 M	tertiary butyl alcohol	1.167	1.132	3.0	111	0.00	8.11	
4 I	pentafluorobenzene	1.000	1.000	0.0	99	0.00	10.21	
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----				
6 M	chlorodifluoromethane	0.392	0.442	-12.8	112	-0.04	4.52	
7 M	dichlorodifluoromethane	0.522	0.562	-7.7	111	-0.06	4.50	
8 M	chloromethane	0.450	0.521	-15.8	120	0.00	4.88	
9 M	vinyl chloride	0.548	0.561	-2.4	107	0.00	5.16	
10 M	bromomethane	0.293	0.312	-6.5	109	0.00	5.84	
11 M	chloroethane	0.246	0.254	-3.3	105	0.00	6.03	
12 M	vinyl bromide			-----NA-----				
13 M	trichlorofluoromethane	0.602	0.752	-24.9#	123	-0.04	6.50	
14	pentane			-----NA-----				
15 M	ethyl ether	0.249	0.208	16.5	87	0.00	6.93	
16 M	acrolein	0.091	0.087	4.4	102	0.00	7.14	
17 M	chlorotrifluoroethylene			-----NA-----				
18 M	2-chloropropane	0.692	0.638	7.8	95	-0.01	7.11	
19 M	1,1-dichloroethene	0.369	0.360	2.4	100	-0.01	7.35	
20 M	acetone	0.039	0.036	7.7	97	0.02	7.40	
21 M	allyl chloride	0.724	0.608	16.0	85	0.00	7.86	
22 M	acetonitrile	0.026	0.022	15.4	89	0.00	7.79	
23 M	acetaldehyde			-----NA-----				
24 M	iodomethane	0.691	0.683	1.2	96	0.00	7.62	
25 M	iso-butyl alcohol			-----NA-----				
26 M	carbon disulfide	1.172	1.112	5.1	91	-0.01	7.75	
27 M	methylene chloride	0.409	0.363	11.2	90	0.00	8.03	
28 M	1-chloropropane	0.657	0.677	-3.0	99	0.00	8.09	
29 M	methyl acetate	0.346	0.344	0.6	108	0.00	7.84	
30 M	methyl tert butyl ether	1.259	1.185	5.9	89	0.00	8.39	
31 M	trans-1,2-dichloroethene	0.422	0.361	14.5	87	0.00	8.43	
32 M	di-isopropyl ether	1.232	1.182	4.1	94	0.00	8.99	
33 M	ethyl tert-butyl ether	1.275	1.287	-0.9	98	0.00	9.45	
34 M	2-butanone	True 20.000	Calc. 18.531	% Drift 7.3	97	0.00	9.67	
35 M	1,1-dichloroethane	0.690	0.630	8.7	88	0.00	8.97	
36 M	chloroprene	0.582	0.612	-5.2	106	0.00	9.10	
37 M	acrylonitrile	0.147	0.138	6.1	91	0.00	8.34	

6.9.4  
6

## Continuing Calibration Summary

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VD8566-CC8524

Lab FileID: D209861.D

38 M	vinyl acetate	0.089	0.081	9.0	95	-0.01	8.96
39 M	ethyl acetate	0.063	0.049	22.2#	90	0.00	9.69
40 M	2,2-dichloropropane	0.603	0.533	11.6	87	0.00	9.73
41 M	cis-1,2-dichloroethene	0.446	0.381	14.6	87	-0.01	9.69
42 M	propionitrile	0.060	0.056	6.7	95	0.00	9.73
43 M	bromochloromethane	0.225	0.206	8.4	94	0.00	10.00
44 M	tetrahydrofuran	0.058	0.052	10.3	93	0.00	10.06
45 M	chloroform	0.677	0.665	1.8	95	0.00	10.05
46 S	dibromofluoromethane (s)	0.373	0.343	8.0	90	0.00	10.24
47 S	1,2-dichloroethane-d4 (s)	0.464	0.455	1.9	91	0.00	10.67
48 M	freon 113	0.270	0.298	-10.4	106	0.03	7.38
49 M	methacrylonitrile	0.260	0.236	9.2	92	0.00	9.93
50 m	t-butyl formate	0.387	0.415	-7.2	106	0.00	10.13
51 M	1,1,1-trichloroethane	0.616	0.603	2.1	95	0.00	10.35
52 M	tert-amyl methyl ether	1.303	1.290	1.0	98	-0.01	10.82
53 I	1,4-difluorobenzene	1.000	1.000	0.0	95	0.00	11.13
54 M	cyclohexane	0.418	0.379	9.3	84	0.00	10.44
55	tert amyl alcohol			-----NA-----			
56 M	2,2,4-trimethylpentane	0.948	0.804	15.2	85	0.00	10.83
57 M	epichlorohydrin	0.032	0.035	-9.4	103	0.00	12.39
58 M	n-butyl alcohol	0.009	0.010	-11.1	115	0.00	11.23
59 M	carbon tetrachloride	0.412	0.455	-10.4	102	0.00	10.55
60 M	1,1-dichloropropene	0.377	0.380	-0.8	91	-0.01	10.51
61 M	hexane	0.344	0.321	6.7	95	-0.01	8.76
62 M	benzene	1.121	1.066	4.9	89	0.00	10.77
63 M	heptane	0.194	0.317	-63.4#	155	0.00	10.98
64 M	isopropyl acetate	0.593	0.612	-3.2	99	0.00	10.69
65 M	1,2-dichloroethane	0.415	0.443	-6.7	98	0.00	10.76
66	Ethyl Acrylate			-----NA-----			
67 M	trichloroethene	0.280	0.280	0.0	93	0.00	11.48
68 M	2-nitropropane	0.581	0.656	-12.9	113	0.00	12.28
69 M	2-chloroethyl vinyl ether	0.143	0.144	-0.7	100	0.00	12.28
70 M	methyl methacrylate	0.090	0.083	7.8	88	0.00	11.75
71 M	tert-amyl ethyl ether			-----NA-----			
72 M	1,2-dichloropropene	0.277	0.274	1.1	91	0.00	11.75
73 M	methylcyclohexane	0.470	0.446	5.1	91	0.00	11.75
74 M	dibromomethane	0.177	0.173	2.3	90	0.00	11.89
75 M	bromodichloromethane	0.396	0.405	-2.3	96	0.00	12.02
76 M	cis-1,3-dichloropropene	0.497	0.475	4.4	90	0.00	12.51
77 S	toluene-d8 (s)	1.034	0.979	5.3	89	0.00	12.84
78 M	4-methyl-2-pentanone	0.126	0.119	5.6	90	0.00	12.63
79 M	toluene	0.719	0.715	0.6	91	0.00	12.92
-----				True	Calc.	% Drift	-----
80 M	3-methyl-1-butanol	400.000	414.146	-3.5	109	0.00	12.63
-----				AvgRF	CCRF	% Dev	-----
81 M	trans-1,3-dichloropropene	0.462	0.458	0.9	93	0.00	13.09
82 M	ethyl methacrylate	0.423	0.384	9.2	88	0.00	13.11
83 M	1,1,2-trichloroethane	0.213	0.202	5.2	88	0.00	13.32
84 M	2-hexanone	0.113	0.098	13.3	92	0.00	13.54
85 I	chlorobenzene-d5	1.000	1.000	0.0	97	0.00	14.47
86 M	tetrachloroethene	0.405	0.425	-4.9	95	0.00	13.55
87 M	1,3-dichloropropane	0.506	0.481	4.9	88	0.00	13.53
88 M	butyl acetate	0.222	0.213	4.1	97	0.00	13.62
89 m	3,3-dimethyl-1-butanol	0.036	0.037	-2.8	110	0.00	13.72
90 M	dibromochloromethane	0.375	0.368	1.9	92	0.00	13.81
91 M	1,2-dibromoethane	0.316	0.302	4.4	92	0.00	13.98

## Continuing Calibration Summary

Job Number: JB38251

Sample: VD8566-CC8524

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: D209861.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

92 M	chlorobenzene	0.930	0.886	4.7	89	0.00	14.51
93 M	1,1,1,2-tetrachloroethane	0.367	0.360	1.9	92	0.00	14.57
94 M	ethylbenzene	1.492	1.478	0.9	91	0.00	14.58
95 M	m,p-xylene	0.617	0.615	0.3	90	0.00	14.70
96 M	o-xylene	0.612	0.588	3.9	88	0.00	15.16
97 M	styrene	1.060	0.979	7.6	88	0.00	15.17
98 M	bromoform	0.314	0.299	4.8	93	0.00	15.43
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	99	0.00	17.06
100 M	isopropylbenzene	2.668	2.630	1.4	95	0.00	15.55
101 S	4-bromofluorobenzene (s)	0.736	0.654	11.1	84	0.00	15.76
102 M	bromobenzene	0.737	0.716	2.8	91	0.00	15.98
-----		True	Calc.	% Drift	-----		
103 M	cyclohexanone	200.000	133.400	33.3#	57	0.00	15.71
-----		AvgRF	CCRF	% Dev	-----		
104 M	1,1,2,2-tetrachloroethane	0.719	0.653	9.2	91	0.00	15.84
105 M	trans-1,4-dichloro-2-bute	0.186	0.184	1.1	97	0.00	15.90
106 M	1,2,3-trichloropropane	0.218	0.227	-4.1	102	0.00	15.93
107 M	n-propylbenzene	2.903	2.787	4.0	90	0.00	16.01
108 M	p-ethyltoluene			-----NA-----			
109 M	2-chlorotoluene	0.667	0.642	3.7	92	0.00	16.16
110 M	4-chlorotoluene	1.975	1.777	10.0	88	0.00	16.27
111 M	1,3,5-trimethylbenzene	2.495	2.230	10.6	91	0.00	16.17
112 M	tert-butylbenzene	2.106	2.051	2.6	92	0.00	16.57
113 M	pentachloroethane	0.534	0.489	8.4	91	0.00	16.64
114 M	1,2,4-trimethylbenzene	2.389	2.202	7.8	89	0.00	16.62
115 M	sec-butylbenzene	2.925	2.817	3.7	93	0.00	16.81
116 M	1,3-dichlorobenzene	1.391	1.330	4.4	91	0.00	17.00
117 M	p-isopropyltoluene	2.519	2.479	1.6	94	0.00	16.94
118 M	1,4-dichlorobenzene	1.504	1.402	6.8	91	0.00	17.09
119	Benzyl Chloride	1.280	1.548	-20.9#	119	0.00	17.21
120 M	p-diethylbenzene			-----NA-----			
121 M	1,2-dichlorobenzene	1.376	1.330	3.3	93	0.00	17.53
122 M	n-butylbenzene	1.185	1.156	2.4	91	0.00	17.40
123 M	1,2,4,5-tetramethylbenzen			-----NA-----			
124 M	1,2-dibromo-3-chloropropane	0.136	0.141	-3.7	100	0.00	18.37
125 M	1,3,5-trichlorobenzene	1.082	1.163	-7.5	101	0.00	18.61
126 M	1,2,4-trichlorobenzene	0.852	0.880	-3.3	105	0.00	19.33
127 M	hexachlorobutadiene	0.524	0.651	-24.2#	116	0.00	19.48
-----		True	Calc.	% Drift	-----		
128 M	naphthalene	20.000	20.772	-3.9	116	0.00	19.65
129 M	1,2,3-trichlorobenzene	20.000	20.775	-3.9	112	0.00	19.93
-----		AvgRF	CCRF	% Dev	-----		
130 M	hexachloroethane	0.513	0.445	13.3	87	0.00	17.83
-----							

( # ) = Out of Range  
d208874.D MD8524.MSPCC's out = 0 CCC's out = 0  
Tue Jun 11 12:50:46 20136.9.4  
6

# Continuing Calibration Summary

Page 1 of 3

Job Number: JB38251

Sample: VD8568-CC8524

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: D209913A.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\d209913A.D Vial: 3  
 Acq On : 11 Jun 2013 1:52 pm Operator: EmilyT  
 Sample : cc8524-20 Inst : MSD  
 Misc : ms29965,vd8568,5,,100,5,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\METHODS\MD8524.M (RTE Integrator)  
 Title : SW-846 Method 8260B  
 Last Update : Tue May 28 12:32:06 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.	
1 I	Tert Butyl Alcohol-d9	1.000	1.000	0.0	90	0.01	8.00	
2 M	1,4-dioxane	0.087	0.078	10.3	89	0.00	11.86	
3 M	tertiary butyl alcohol	1.167	1.154	1.1	88	0.00	8.12	
4 I	pentafluorobenzene	1.000	1.000	0.0	86	0.00	10.22	
5 M	1,2-dichloro-1,2,2-triflu			-----NA-----				
6 M	chlorodifluoromethane	0.392	0.425	-8.4	93	-0.03	4.52	
7 M	dichlorodifluoromethane	0.522	0.700	-34.1#	119	-0.03	4.52	
8 M	chloromethane	0.450	0.566	-25.8#	113	0.00	4.89	
9 M	vinyl chloride	0.548	0.615	-12.2	101	0.00	5.16	
10 M	bromomethane	0.293	0.339	-15.7	102	0.00	5.84	
11 M	chloroethane	0.246	0.277	-12.6	98	0.00	6.03	
12 M	vinyl bromide			-----NA-----				
13 M	trichlorofluoromethane	0.602	0.895	-48.7#	126	-0.04	6.49	
14	pentane			-----NA-----				
15 M	ethyl ether	0.249	0.215	13.7	78	0.00	6.93	
16 M	acrolein	0.091	0.089	2.2	89	0.00	7.15	
17 M	chlorotrifluoroethene			-----NA-----				
18 M	2-chloropropane	0.692	0.653	5.6	84	0.00	7.12	
19 M	1,1-dichloroethene	0.369	0.373	-1.1	89	-0.01	7.35	
20 M	acetone	0.039	0.030	23.1#	70	0.00	7.37	
21 M	allyl chloride	0.724	0.649	10.4	78	0.00	7.87	
22 M	acetonitrile	0.026	0.019	26.9#	66	0.01	7.80	
23 M	acetaldehyde			-----NA-----				
24 M	iodomethane	0.691	0.718	-3.9	87	0.00	7.63	
25 M	iso-butyl alcohol			-----NA-----				
26 M	carbon disulfide	1.172	1.203	-2.6	85	0.00	7.76	
27 M	methylene chloride	0.409	0.387	5.4	83	0.00	8.04	
28 M	1-chloropropane	0.657	0.726	-10.5	91	0.00	8.10	
29 M	methyl acetate	0.346	0.308	11.0	83	0.00	7.84	
30 M	methyl tert butyl ether	1.259	1.282	-1.8	83	0.00	8.40	
31 M	trans-1,2-dichloroethene	0.422	0.385	8.8	80	0.00	8.43	
32 M	di-isopropyl ether	1.232	1.182	4.1	81	0.00	9.00	
33 M	ethyl tert-butyl ether	1.275	1.322	-3.7	87	0.00	9.46	
34 M	2-butanone	True 20.000	Calc. 17.919	% Drift 10.4	81	0.00	9.67	
35 M	1,1-dichloroethane	0.690	0.659	4.5	79	0.00	8.98	
36 M	chloroprene	0.582	0.606	-4.1	90	0.00	9.10	
37 M	acrylonitrile	0.147	0.142	3.4	80	0.00	8.34	

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6

## Continuing Calibration Summary

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VD8568-CC8524

Lab FileID: D209913A.D

38 M	vinyl acetate	0.089	0.088	1.1	89	0.00	8.97
39 M	ethyl acetate	0.063	0.053	15.9	84	0.00	9.70
40 M	2,2-dichloropropane	0.603	0.572	5.1	80	0.00	9.72
41 M	cis-1,2-dichloroethene	0.446	0.420	5.8	83	0.00	9.70
42 M	propionitrile	0.060	0.057	5.0	83	0.00	9.74
43 M	bromochloromethane	0.225	0.210	6.7	82	0.00	10.00
44 M	tetrahydrofuran	0.058	0.053	8.6	81	0.00	10.06
45 M	chloroform	0.677	0.698	-3.1	86	0.00	10.06
46 S	dibromofluoromethane (s)	0.373	0.396	-6.2	89	0.00	10.25
47 S	1,2-dichloroethane-d4 (s)	0.464	0.544	-17.2	94	0.00	10.68
48 M	freon 113	0.270	0.304	-12.6	93	0.03	7.38
49 M	methacrylonitrile	0.260	0.238	8.5	79	0.00	9.93
50 m	t-butyl formate	0.387	0.425	-9.8	93	0.00	10.13
51 M	1,1,1-trichloroethane	0.616	0.663	-7.6	90	0.00	10.35
52 M	tert-amyl methyl ether	1.303	1.318	-1.2	86	0.00	10.83
53 I	1,4-difluorobenzene	1.000	1.000	0.0	81	0.00	11.14
54 M	cyclohexane	0.418	0.439	-5.0	82	0.00	10.44
55	tert amyl alcohol			-----NA-----			
56 M	2,2,4-trimethylpentane	0.948	0.813	14.2	73	0.00	10.83
57 M	epichlorohydrin	0.032	0.037	-15.6	90	0.00	12.40
58 M	n-butyl alcohol	0.009	0.011	-22.2#	103	0.00	11.24
59 M	carbon tetrachloride	0.412	0.512	-24.3#	97	0.00	10.55
60 M	1,1-dichloropropene	0.377	0.412	-9.3	84	0.00	10.52
61 M	hexane	0.344	0.326	5.2	81	0.00	8.77
62 M	benzene	1.121	1.122	-0.1	79	0.00	10.78
63 M	heptane	0.194	0.357	-84.0#	148	0.00	10.98
64 M	isopropyl acetate	0.593	0.624	-5.2	86	0.00	10.70
65 M	1,2-dichloroethane	0.415	0.495	-19.3	93	0.00	10.76
66	Ethyl Acrylate			-----NA-----			
67 M	trichloroethene	0.280	0.307	-9.6	87	0.00	11.49
68 M	2-nitropropane	0.581	0.699	-20.3#	102	0.00	12.28
69 M	2-chloroethyl vinyl ether	0.143	0.154	-7.7	91	0.00	12.28
70 M	methyl methacrylate	0.090	0.094	-4.4	84	0.00	11.76
71 M	tert-amyl ethyl ether			-----NA-----			
72 M	1,2-dichloropropene	0.277	0.286	-3.2	81	0.00	11.75
73 M	methylcyclohexane	0.470	0.483	-2.8	84	0.00	11.75
74 M	dibromomethane	0.177	0.201	-13.6	89	0.00	11.89
75 M	bromodichloromethane	0.396	0.444	-12.1	89	0.00	12.02
76 M	cis-1,3-dichloropropene	0.497	0.510	-2.6	82	0.00	12.51
77 S	toluene-d8 (s)	1.034	1.140	-10.3	88	0.00	12.84
78 M	4-methyl-2-pentanone	0.126	0.133	-5.6	85	0.00	12.63
79 M	toluene	0.719	0.764	-6.3	82	0.00	12.92
		-----	True	Calc.	% Drift	-----	
80 M	3-methyl-1-butanol	400.000	397.116	0.7	88	0.01	12.63
		-----	AvgRF	CCRF	% Dev	-----	
81 M	trans-1,3-dichloropropene	0.462	0.525	-13.6	90	0.00	13.10
82 M	ethyl methacrylate	0.423	0.431	-1.9	84	0.00	13.12
83 M	1,1,2-trichloroethane	0.213	0.221	-3.8	81	0.00	13.33
84 M	2-hexanone	0.113	0.108	4.4	86	0.00	13.54
85 I	chlorobenzene-d5	1.000	1.000	0.0	86	0.00	14.48
86 M	tetrachloroethene	0.405	0.431	-6.4	85	0.00	13.55
87 M	1,3-dichloropropane	0.506	0.505	0.2	82	0.00	13.53
88 M	butyl acetate	0.222	0.226	-1.8	91	0.00	13.62
89 m	3,3-dimethyl-1-butanol	0.036	0.036	0.0	96	0.00	13.72
90 M	dibromochloromethane	0.375	0.408	-8.8	91	0.00	13.81
91 M	1,2-dibromoethane	0.316	0.302	4.4	82	0.00	13.99

## Continuing Calibration Summary

Job Number: JB38251

Sample: VD8568-CC8524

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: D209913A.D

92 M	chlorobenzene	0.930	0.948	-1.9	85	0.00	14.51
93 M	1,1,1,2-tetrachloroethane	0.367	0.382	-4.1	87	0.00	14.57
94 M	ethylbenzene	1.492	1.573	-5.4	86	0.00	14.58
95 M	m,p-xylene	0.617	0.651	-5.5	85	0.00	14.70
96 M	o-xylene	0.612	0.637	-4.1	84	0.00	15.16
97 M	styrene	1.060	1.048	1.1	84	0.00	15.17
98 M	bromoform	0.314	0.324	-3.2	89	0.00	15.44
99 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	91	0.00	17.06
100 M	isopropylbenzene	2.668	2.652	0.6	88	0.00	15.55
101 S	4-bromofluorobenzene (s)	0.736	0.763	-3.7	91	0.00	15.75
102 M	bromobenzene	0.737	0.778	-5.6	91	0.00	15.98
-----		True	Calc.	% Drift	-----		
103 M	cyclohexanone	200.000	170.633	14.7	68	0.00	15.71
-----		AvgRF	CCRF	% Dev	-----		
104 M	1,1,2,2-tetrachloroethane	0.719	0.670	6.8	86	0.00	15.84
105 M	trans-1,4-dichloro-2-bute	0.186	0.205	-10.2	100	0.00	15.90
106 M	1,2,3-trichloropropane	0.218	0.228	-4.6	94	0.00	15.94
107 M	n-propylbenzene	2.903	2.968	-2.2	88	0.00	16.01
108 M	p-ethyltoluene			-----NA-----			
109 M	2-chlorotoluene	0.667	0.660	1.0	87	0.00	16.16
110 M	4-chlorotoluene	1.975	1.866	5.5	85	0.00	16.27
111 M	1,3,5-trimethylbenzene	2.495	2.332	6.5	87	0.00	16.17
112 M	tert-butylbenzene	2.106	2.131	-1.2	87	0.00	16.57
113 M	pentachloroethane	0.534	0.538	-0.7	92	0.00	16.64
114 M	1,2,4-trimethylbenzene	2.389	2.377	0.5	88	0.00	16.62
115 M	sec-butylbenzene	2.925	3.010	-2.9	91	0.00	16.81
116 M	1,3-dichlorobenzene	1.391	1.448	-4.1	91	0.00	17.00
117 M	p-isopropyltoluene	2.519	2.623	-4.1	91	0.00	16.94
118 M	1,4-dichlorobenzene	1.504	1.525	-1.4	91	0.00	17.09
119	Benzyl Chloride	1.280	1.602	-25.2#	113	0.00	17.21
120 M	p-diethylbenzene			-----NA-----			
121 M	1,2-dichlorobenzene	1.376	1.474	-7.1	94	0.00	17.53
122 M	n-butylbenzene	1.185	1.222	-3.1	88	0.00	17.40
123 M	1,2,4,5-tetramethylbenzen			-----NA-----			
124 M	1,2-dibromo-3-chloropropane	0.136	0.158	-16.2	102	0.00	18.37
125 M	1,3,5-trichlorobenzene	1.082	1.232	-13.9	98	0.00	18.60
126 M	1,2,4-trichlorobenzene	0.852	0.958	-12.4	104	0.00	19.34
127 M	hexachlorobutadiene	0.524	0.689	-31.5#	113	0.00	19.48
-----		True	Calc.	% Drift	-----		
128 M	naphthalene	20.000	21.599	-8.0	111	0.00	19.66
129 M	1,2,3-trichlorobenzene	20.000	21.898	-9.5	109	0.00	19.93
-----		AvgRF	CCRF	% Dev	-----		
130 M	hexachloroethane	0.513	0.495	3.5	89	0.00	17.83
-----							

( # ) = Out of Range  
d208874.D MD8524.MSPCC's out = 0 CCC's out = 0  
Wed Jun 12 10:24:21 20136.9.5  
6

# Initial Calibration Summary

Page 1 of 5

Job Number: JB38251

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Response Factor Report MSI

Method : C:\MSDCHEM\1\METHODS\MI7422.M ( RTE Integrator )

Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um

Last Update : Mon Apr 29 17:40:31 2013

Response via : Initial Calibration

### Calibration Files

0.5 =I183727.D	1 =I183728.D	2 =I183729.D	5 =I183730.D
10 =I183731.D	20 =I183735.D	50 =I183734.D	100 =I183733.D
200 =I183732.D	=		

### Compound

	0.5	1	2	5	10	20	50	100	200	Avg	%RSD
<hr/>											
1) I Tert Butyl Alcohol-d9										ISTD	
2) tertiary butyl alcohol	0.110	0.111	0.107	0.106	0.107	0.100	0.097	0.098	0.105	0.105	5.29
3) iso-butyl alcohol	0.019	0.022	0.021	0.024	0.023	0.021	0.021	0.021	0.022	0.022	8.06
4) 1,4-dioxane	0.008	0.008	0.009	0.009	0.009	0.009	0.008	0.008	0.008#	0.008#	5.35
5) I pentafluorobenzene										ISTD	
6) chlorodifluoromethane	0.403	0.373	0.370	0.379	0.305	0.348	0.348	0.386	0.364	0.364	8.27
7) dichlorodifluoromethane	0.440	0.476	0.542	0.548	0.446	0.527	0.542	0.582	0.513	0.513	10.17
8) chloromethane	0.524	0.495	0.471	0.464	0.395	0.437	0.452	0.471	0.464	0.464	8.24
9) vinyl chloride	0.468	0.535	0.580	0.580	0.491	0.561	0.577	0.608	0.550	0.550	8.84
10) bromomethane	0.387	0.340	0.328	0.308	0.295	0.287	0.291	0.299	0.317	0.317	10.73
11) chloroethane	0.211	0.241	0.221	0.222	0.206	0.209	0.218	0.225	0.219	0.219	5.13
12) trichlorofluoromethane	0.490	0.544	0.591	0.597	0.523	0.579	0.598	0.631	0.569	0.569	8.12
13) ethyl ether	0.196	0.187	0.170	0.178	0.174	0.181	0.174	0.181	0.181	0.181	5.15
14) acrolein	0.057	0.054	0.049	0.051	0.045	0.048	0.047	0.049	0.050	0.050	7.78
15) freon 113	0.216	0.228	0.258	0.256	0.229	0.253	0.252	0.272	0.245	0.245	7.76
16) 1,1-dichloroethene	0.471	0.458	0.459	0.497	0.483	0.446	0.493	0.518	0.543	0.485	6.39
17) acetone	0.024	0.028	0.021	0.021	0.022	0.023	0.023	0.023	0.023	0.023	11.06
18) iodomethane	0.539	0.586	0.638	0.635	0.646	0.609	0.665	0.680	0.698	0.633	7.78
19) carbon disulfide	1.003	1.102	1.143	1.203	1.183	1.081	1.220	1.280	1.324	1.171	8.57
20) methyl acetate	0.037	0.042	0.041	0.040	0.042	0.042	0.044	0.044	0.041	0.041	5.42
21) allyl chloride	0.172	0.190	0.200	0.199	0.183	0.198	0.205	0.215	0.195	0.195	6.74
22) acetonitrile	0.076	0.077	0.049	0.052	0.054	0.056	0.056	0.061	0.061	0.061	20.74
----- Linear regression ----- Coefficient = 0.9982											

9.6  
6

# Initial Calibration Summary

Page 2 of 5

Job Number: JB38251

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

$$\text{Response Ratio} = -0.00288 + 0.05593 * A$$

23)	methylene chloride	0.407	0.394	0.353	0.372	0.376	0.390	0.382	4.99			
24)	methyl tert butyl ether	0.974	1.004	1.004	0.915	0.950	0.883	0.940	0.942	0.987	0.955	4.30
25)	acrylonitrile	0.071	0.086	0.085	0.080	0.090	0.082	0.085	0.087	0.091	0.084	7.30
26)	trans-1,2-dichloroethene	0.403	0.459	0.415	0.393	0.379	0.337	0.366	0.373	0.387	0.390	8.75
27)	hexane	0.496	0.485	0.456	0.367	0.409	0.406	0.442	0.437	10.55		
28)	di-isopropyl ether	1.043	1.030	1.045	1.018	1.031	0.926	0.977	0.964	1.004	1.004	4.04
29)	vinyl acetate	0.198	0.202	0.209	0.202	0.180	0.199	0.200	0.207	0.200	0.200	4.37
30)	1,1-dichloroethane	0.537	0.567	0.592	0.634	0.618	0.562	0.607	0.622	0.642	0.598	5.99
31)	chloroprene	0.408	0.397	0.443	0.464	0.485	0.413	0.462	0.463	0.504	0.449	8.11
32)	ethyl tert-butyl ether	1.069	1.061	1.077	1.020	1.061	0.984	1.036	1.026	1.090	1.047	3.18
33)	2-butanone	0.029	0.032	0.029	0.031	0.032	0.034	0.031	0.031	0.031	0.031	6.43
34)	ethyl acetate	0.029	0.037	0.041	0.032	0.032	0.032	0.034	0.034	0.034	0.034	11.77
35)	2,2-dichloropropane	0.575	0.521	0.533	0.531	0.518	0.462	0.513	0.533	0.553	0.527	5.83
36)	cis-1,2-dichloroethene	0.369	0.442	0.418	0.406	0.412	0.377	0.400	0.406	0.420	0.406	5.51
37)	methacrylonitrile	0.119	0.112	0.095	0.109	0.103	0.111	0.111	0.111	0.118	0.110	7.10
38)	propionitrile	0.032	0.031	0.031	0.034	0.032	0.034	0.034	0.037	0.033	0.033	6.03
39)	bromochloromethane	0.169	0.193	0.178	0.185	0.176	0.187	0.189	0.195	0.184	0.184	4.88
40)	tetrahydrofuran	0.108	0.093	0.093	0.078	0.079	0.081	0.083	0.088	0.088	0.088	12.35
41)	chloroform	0.631	0.591	0.635	0.610	0.628	0.579	0.620	0.634	0.663	0.621	4.02
42)	tert-Butyl Formate	0.242	0.256	0.232	0.250	0.230	0.251	0.251	0.270	0.248	0.248	5.32
43)	dibromofluoromethane (s)	0.455	0.365	0.356	0.365	0.375	0.383	0.383	0.383	0.383	0.383	10.64
44)	1,1,1-trichloroethane	0.449	0.521	0.515	0.550	0.535	0.509	0.555	0.580	0.601	0.535	8.26
45)	cyclohexane	0.465	0.450	0.500	0.523	0.500	0.465	0.516	0.549	0.570	0.504	7.93
46)	I 1,4-difluorobenzene	-----	-----	-----	-----	-----	ISTD-----					
47)	1,2-dichloroethane-d4 (s)	0.318	0.288	0.242	0.235	0.238	0.244	0.261	0.261	0.261	0.261	13.14
48)	carbon tetrachloride	0.253	0.267	0.313	0.320	0.313	0.305	0.336	0.352	0.365	0.314	11.58
49)	1,1-dichloropropene	0.290	0.283	0.313	0.330	0.321	0.299	0.328	0.341	0.355	0.318	7.49
50)	isopropyl acetate	0.068	0.085	0.076	0.081	0.074	0.078	0.077	0.082	0.078	0.078	6.67
51)	benzene	0.971	1.013	0.996	0.999	0.990	0.926	0.994	1.007	1.031	0.992	2.99

9.6.6

# Initial Calibration Summary

Page 3 of 5

Job Number: JB38251

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

52)	2,2,4-trimethylpentane	0.729	0.760	0.827	0.874	0.866	0.754	0.851	0.861	0.925	0.827	7.95
53)	tert-amyl methyl ether	0.662	0.673	0.841	0.666	0.690	0.653	0.688	0.676	0.718	0.696	8.25
54)	1,2-dichloroethane	0.258	0.268	0.272	0.270	0.281	0.266	0.284	0.285	0.299	0.276	4.55
55)	heptane	0.153	0.164	0.173	0.172	0.145	0.160	0.163	0.175	0.163	0.163	6.44
56)	n-butyl alcohol	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.006	0.005#	0.005#	7.78
57)	trichloroethene	0.218	0.225	0.236	0.254	0.250	0.230	0.254	0.259	0.270	0.244	7.15
58)	ethyl acrylate	0.336	0.343	0.295	0.326	0.335	0.362	0.333	0.333	0.333	0.333	6.59
59)	methyl methacrylate	0.111	0.116	0.119	0.123	0.114	0.125	0.127	0.133	0.121	0.121	6.20
60)	1,2-dichloropropane	0.234	0.232	0.234	0.238	0.238	0.223	0.238	0.238	0.248	0.236	2.88
61)	methylcyclohexane	0.348	0.348	0.394	0.418	0.417	0.371	0.412	0.414	0.444	0.396	8.48
62)	dibromomethane	0.133	0.138	0.135	0.141	0.132	0.140	0.141	0.146	0.138	0.138	3.41
63)	bromodichloromethane	0.257	0.297	0.307	0.308	0.310	0.296	0.317	0.321	0.340	0.306	7.38
64)	2-nitropropane	0.068	0.066	0.060	0.061	0.059	0.063	0.063	0.063	0.063	0.063	6.00
65)	2-chloroethyl vinyl ether	0.083	0.086	0.083	0.090	0.082	0.090	0.088	0.093	0.087	0.087	4.81
66)	epichlorohydrin	0.021	0.016	0.015	0.016	0.015	0.015	0.015	0.016	0.016	0.016	13.08
67)	cis-1,3-dichloropropene	0.350	0.357	0.383	0.378	0.384	0.361	0.391	0.391	0.408	0.378	4.95
68)	4-methyl-2-pentanone	0.061	0.070	0.065	0.068	0.070	0.074	0.068	0.068	0.068	0.068	6.59
69)	3-methyl-1-butanol	0.004	0.004	0.005	0.004	0.005	0.005	0.005	0.005	0.005#	0.005#	8.56
70)	toluene	0.915	0.993	1.000	1.019	1.019	0.955	1.028	1.044	1.085	1.006	4.90
71)	trans-1,3-dichloropropene	0.323	0.332	0.326	0.315	0.337	0.309	0.333	0.334	0.351	0.329	3.80
72)	ethyl methacrylate	0.209	0.242	0.242	0.229	0.240	0.232	0.247	0.249	0.262	0.239	6.16
73)	1,1,2-trichloroethane	0.162	0.163	0.156	0.161	0.153	0.158	0.159	0.167	0.160	0.160	2.71
74)	2-hexanone	0.055	0.062	0.057	0.061	0.061	0.065	0.060	0.060	0.060	0.060	5.48
75)	I chlorobenzene-d5										-----ISTD-----	
76)	toluene-d8 (s)	1.062	1.126	1.056	1.090	1.139	1.158				1.105	3.81
77)	tetrachloroethene	0.279	0.297	0.311	0.341	0.331	0.313	0.342	0.349	0.361	0.325	8.23
78)	1,3-dichloropropane	0.327	0.361	0.375	0.357	0.375	0.357	0.372	0.369	0.381	0.364	4.42
79)	butyl acetate	0.154	0.133	0.144	0.133	0.140	0.133	0.143	0.143	0.143	0.140	5.60
80)	3,3-Dimethyl-1-Butanol	0.024	0.021	0.019	0.021	0.020	0.021	0.020	0.022	0.021	0.021	7.47
81)	dibromochloromethane	0.244	0.306	0.288	0.283	0.300	0.289	0.308	0.313	0.330	0.296	8.23

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**Initial Calibration Summary**

Job Number: JB38251

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

82)	1,2-dibromoethane	0.230	0.249	0.250	0.238	0.250	0.239	0.253	0.252	0.262	0.247	3.86
83)	chlorobenzene	0.753	0.798	0.836	0.841	0.829	0.795	0.840	0.837	0.867	0.822	4.13
84)	1,1,1,2-tetrachloroethane	0.265	0.286	0.291	0.288	0.300	0.287	0.308	0.311	0.321	0.295	5.67
85)	ethylbenzene	1.337	1.342	1.363	1.395	1.377	1.317	1.404	1.413	1.456	1.378	3.16
86)	m,p-xylene	0.491	0.519	0.531	0.555	0.548	0.519	0.552	0.553	0.562	0.537	4.34
87)	o-xylene	0.513	0.525	0.509	0.535	0.526	0.517	0.543	0.542	0.556	0.529	2.94
88)	styrene	0.774	0.872	0.865	0.891	0.891	0.854	0.915	0.917	0.943	0.880	5.55
89)	bromoform	0.191	0.187	0.180	0.189	0.189	0.200	0.206	0.221	0.196	6.73	9.69
90)	I 1,4-dichlorobenzene-d	-----ISTD-----										
91)	4-bromofluorobenzene (s)	0.693	0.729	0.686	0.697	0.729	0.740				0.712	3.18
92)	isopropylbenzene	2.272	2.345	2.533	2.653	2.562	2.393	2.555	2.593	2.606	2.501	5.26
93)	cyclohexanone										0.000#	-1.00
94)	1,1,2,2-tetrachloroethane	0.606	0.595	0.587	0.553	0.594	0.548	0.565	0.566	0.585	0.578	3.52
95)	trans-1,4-dichloro-2-butene	0.131	0.128	0.124	0.143	0.128	0.134	0.135	0.143		0.133	5.21
96)	1,2,3-trichloropropane	0.128	0.134	0.120	0.142	0.125	0.131	0.131	0.135		0.131	5.06
97)	n-propylbenzene	3.076	2.949	3.042	3.145	3.021	2.797	2.987	3.010	3.042	3.008	3.20
98)	bromobenzene	0.654	0.701	0.691	0.695	0.692	0.671	0.701	0.692	0.705	0.689	2.38
99)	2-chlorotoluene	0.638	0.686	0.659	0.667	0.645	0.610	0.638	0.634	0.643	0.647	3.35
100)	4-chlorotoluene	2.234	2.013	2.076	1.976	1.899	1.766	1.865	1.869	1.924	1.958	7.03
101)	1,3,5-trimethylbenzene	2.135	2.107	2.174	2.270	2.229	2.088	2.216	2.238	2.259	2.191	3.08
102)	tert-butylbenzene	1.718	1.819	1.849	1.904	1.878	1.766	1.891	1.916	1.935	1.853	3.93
103)	pentachloroethane	0.406	0.427	0.427	0.435	0.423	0.452	0.461	0.467		0.437	4.76
104)	1,2,4-trimethylbenzene	2.272	2.197	2.284	2.335	2.263	2.125	2.253	2.264	2.303	2.255	2.72
105)	sec-butylbenzene	2.730	2.594	2.923	2.981	2.908	2.726	2.928	2.964	2.976	2.859	4.88
106)	p-isopropyltoluene	2.282	2.255	2.489	2.545	2.403	2.300	2.427	2.447	2.486	2.404	4.27
107)	benzyl chloride	1.173	1.136	1.115	1.075	1.133	1.008	1.095	1.105	1.199	1.115	5.00
108)	1,3-dichlorobenzene	1.415	1.353	1.420	1.409	1.352	1.291	1.341	1.347	1.382	1.368	3.09
109)	1,4-dichlorobenzene	1.367	1.466	1.412	1.424	1.381	1.316	1.364	1.363	1.401	1.388	3.11
110)	1,2-dichlorobenzene	1.299	1.299	1.300	1.316	1.305	1.252	1.301	1.296	1.306	1.297	1.38
111)	n-butylbenzene	1.202	1.138	1.317	1.382	1.292	1.215	1.316	1.323	1.340	1.281	6.11

# Initial Calibration Summary

Page 5 of 5

Job Number: JB38251

Sample: VI7422-ICC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183734.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

112)	hexachloroethane	0.494	0.455	0.484	0.466	0.500	0.511	0.514	0.489	4.51
113)	1,2-dibromo-3-chloropropane	0.117	0.131	0.114	0.131	0.122	0.124	0.125	0.120	0.123
114)	1,3,5-Trichlorobenzene	1.082	1.046	1.107	1.153	1.103	1.057	1.112	1.099	1.041
115)	1,2,4-trichlorobenzene	1.000	0.957	0.964	0.945	0.924	0.906	0.950	0.940	0.865
116)	hexachlorobutadiene	0.526	0.616	0.606	0.618	0.600	0.569	0.611	0.599	0.548
117)	naphthalene	2.068	1.910	1.702	1.837	1.872	1.867	1.820	1.646	1.840
118)	1,2,3-trichlorobenzene	0.932	0.862	0.868	0.818	0.827	0.826	0.850	0.810	0.716

(#) = Out of Range    ### Number of calibration levels exceeded format    ###

MI7422.M

Mon Apr 29 17:42:49 2013 RPT1

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6

**Initial Calibration Verification**

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VI7422-ICV7422

Lab FileID: I183736.D

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\VI7422\I183736.D Vial: 41  
 Acq On : 26 Apr 2013 10:09 pm Operator: SCOTTM  
 Sample : ICV7422-50 Inst : MSI  
 Misc : MS47200,VI7422,,,,,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MI7422.M (RTE Integrator)  
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 Last Update : Mon Apr 29 11:03:09 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	97	0.00
2	tertiary butyl alcohol	0.105	0.105	0.0	102	0.00
3	iso-butyl alcohol	0.022	0.023	-4.5	98	0.00
4	1,4-dioxane	0.008	0.010#	-25.0#	106	0.00
5	I pentafluorobenzene	1.000	1.000	0.0	100	0.00
6	chlorodifluoromethane	0.364	0.393	-8.0	113	0.00
7	dichlorodifluoromethane	0.513	0.517	-0.8	98	0.01
8	chloromethane	0.464	0.432	6.9	99	0.00
9	vinyl chloride	0.550	0.542	1.5	97	0.00
10	bromomethane	0.317	0.328	-3.5	114	0.02
11	chloroethane	0.219	0.223	-1.8	107	0.02
12	trichlorofluoromethane	0.569	0.580	-1.9	100	0.00
13	ethyl ether	0.181	0.173	4.4	98	0.00
14	acrolein	0.050	0.051	-2.0	109	0.00
15	freon 113	0.245	0.280	-14.3	111	0.00
16	1,1-dichloroethene	0.485	0.490	-1.0	100	0.00
17	acetone	0.023	0.021	8.7	98	0.00
18	iodomethane	0.633	0.665	-5.1	100	0.00
19	carbon disulfide	1.171	1.203	-2.7	99	0.00
20	methyl acetate	0.041	0.059	-43.9#	141	0.00
21	allyl chloride	0.195	0.196	-0.5	99	0.00
22	acetonitrile	500.000	469.150	6.2	101	0.00
23	methylene chloride	0.382	0.368	3.7	99	0.00
24	methyl tert butyl ether	0.955	0.460	3.8	99	0.00
25	acrylonitrile	0.084	0.081	3.6	96	0.00
26	trans-1,2-dichloroethene	0.390	0.362	7.2	99	0.00
27	hexane	0.437	0.454	-3.9	111	0.00
28	di-isopropyl ether	1.004	1.012	-0.8	104	0.00
29	vinyl acetate	0.200	0.194	3.0	98	0.00
30	1,1-dichloroethane	0.598	0.600	-0.3	99	0.00
31	chloroprene	0.449	0.475	-5.8	103	0.00
32	ethyl tert-butyl ether	1.047	1.073	-2.5	104	0.00
33	2-butanone	0.031	0.030	3.2	97	0.00
34	ethyl acetate	0.034	0.032	5.9	100	0.00
35	2,2-dichloropropane	0.527	0.501	4.9	98	0.00
36	cis-1,2-dichloroethene	0.406	0.396	2.5	99	0.00
37	methacrylonitrile	0.110	0.105	4.5	96	0.00

**Initial Calibration Verification**

Job Number: JB38251

Sample: VI7422-ICV7422

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: I183736.D

38	propionitrile	0.033	0.032	3.0	97	0.00	8.97
39	bromochloromethane	0.184	0.186	-1.1	100	0.00	9.23
40	tetrahydrofuran	0.088	0.076	13.6	97	0.00	9.27
41	chloroform	0.621	0.615	1.0	99	0.00	9.29
42	tert-Butyl Formate	0.248	0.229	7.7	92	0.00	9.32
43 S	dibromofluoromethane (s)	0.383	0.365	4.7	103	0.00	9.49
44	1,1,1-trichloroethane	0.535	0.542	-1.3	98	0.00	9.54
45	cyclohexane	0.504	0.514	-2.0	100	0.00	9.62
46 I	1,4-difluorobenzene	1.000	1.000	0.0	100	0.00	10.37
47 S	1,2-dichloroethane-d4 (s)	0.261	0.237	9.2	101	0.00	9.91
48	carbon tetrachloride	0.314	0.331	-5.4	99	0.00	9.75
49	1,1-dichloropropene	0.318	0.324	-1.9	99	0.00	9.73
50	isopropyl acetate	0.078	0.078	0.0	100	0.00	9.92
51	benzene	0.992	0.979	1.3	99	0.00	9.99
52	2,2,4-trimethylpentane	0.827	0.939	-13.5	111	0.00	10.00
53	tert-amyl methyl ether	0.696	0.694	0.3	101	0.00	10.03
54	1,2-dichloroethane	0.276	0.277	-0.4	98	0.00	10.00
55	heptane	0.163	0.183	-12.3	115	0.00	10.18
56	n-butyl alcohol	0.005	0.005#	0.0	103	0.00	10.50
57	trichloroethene	0.244	0.251	-2.9	99	0.00	10.71
58	ethyl acrylate	0.333	0.335	-0.6	103	0.00	10.94
59	methyl methacrylate	0.121	0.122	-0.8	98	0.00	10.99
60	1,2-dichloropropane	0.236	0.235	0.4	99	0.00	10.97
61	methylcyclohexane	0.396	0.436	-10.1	106	0.00	10.94
62	dibromomethane	0.138	0.136	1.4	98	0.00	11.13
63	bromodichloromethane	0.306	0.315	-2.9	100	0.00	11.27
64	2-nitropropane	0.063	0.058	7.9	96	0.00	11.48
65	2-chloroethyl vinyl ether	0.087	0.090	-3.4	100	0.00	11.51
66	epichlorohydrin	0.016	0.016	0.0	102	0.00	11.63
67	cis-1,3-dichloropropene	0.378	0.379	-0.3	97	0.00	11.73
68	4-methyl-2-pantanone	0.069	0.067	2.9	98	0.00	11.82
69	3-methyl-1-butanol	0.005	0.005#	0.0	103	0.00	11.85
70	toluene	1.006	1.023	-1.7	100	0.00	12.09
71	trans-1,3-dichloropropene	0.329	0.323	1.8	97	0.00	12.29
72	ethyl methacrylate	0.239	0.243	-1.7	99	0.00	12.29
73	1,1,2-trichloroethane	0.160	0.157	1.9	100	0.00	12.50
74	2-hexanone	0.057	0.057	0.0	95	0.00	12.68
75 I	chlorobenzene-d5	1.000	1.000	0.0	101	0.00	13.54
76 S	toluene-d8 (s)	1.105	1.114	-0.8	103	0.00	12.02
77	tetrachloroethene	0.325	0.337	-3.7	100	0.00	12.68
78	1,3-dichloropropane	0.364	0.359	1.4	98	0.00	12.69
79	butyl acetate	0.140	0.140	0.0	101	0.00	12.76
80	3,3-Dimethyl-1-Butanol	0.021	0.020	4.8	98	0.00	12.86
81	dibromochloromethane	0.296	0.303	-2.4	100	0.00	12.95
82	1,2-dibromoethane	0.247	0.245	0.8	98	0.00	13.10
83	chlorobenzene	0.822	0.821	0.1	99	0.00	13.57
84	1,1,1,2-tetrachloroethane	0.295	0.302	-2.4	99	0.00	13.62
85	ethylbenzene	1.378	1.382	-0.3	99	0.00	13.62
86	m,p-xylene	0.537	0.541	-0.7	99	0.00	13.73
87	o-xylene	0.529	0.530	-0.2	99	0.00	14.15
88	styrene	0.880	0.890	-1.1	98	0.00	14.16
89	bromoform	0.196	0.197	-0.5	99	0.00	14.42
90 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	101	0.00	15.89
91 S	4-bromofluorobenzene (s)	0.712	0.713	-0.1	103	0.00	14.70
92	isopropylbenzene	2.501	2.514	-0.5	99	0.00	14.49
93	cyclohexanone	0.000	0.012	0.0	0#	0.00	14.65
94	1,1,2,2-tetrachloroethane	0.578	0.547	5.4	97	0.00	14.80

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**Initial Calibration Verification**

Job Number: JB38251

Sample: VI7422-ICV7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183736.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

95	trans-1,4-dichloro-2-bute	0.133	0.126	5.3	95	0.00	14.84
96	1,2,3-trichloropropane	0.131	0.125	4.6	96	0.00	14.87
97	n-propylbenzene	3.008	2.942	2.2	99	0.00	14.91
98	bromobenzene	0.689	0.683	0.9	98	0.00	14.89
99	2-chlorotoluene	0.647	0.626	3.2	99	0.00	15.06
100	4-chlorotoluene	1.958	1.835	6.3	99	0.00	15.16
101	1,3,5-trimethylbenzene	2.191	2.175	0.7	99	0.00	15.06
102	tert-butylbenzene	1.853	1.856	-0.2	99	0.00	15.42
103	pentachloroethane	0.437	0.447	-2.3	99	0.00	15.50
104	1,2,4-trimethylbenzene	2.255	2.202	2.4	98	0.00	15.47
105	sec-butylbenzene	2.859	2.854	0.2	98	0.00	15.65
106	p-isopropyltoluene	2.404	2.370	1.4	98	0.00	15.77
107	benzyl chloride	1.115	1.098	1.5	101	0.00	16.04
108	1,3-dichlorobenzene	1.368	1.322	3.4	99	0.00	15.84
109	1,4-dichlorobenzene	1.388	1.333	4.0	98	0.00	15.92
110	1,2-dichlorobenzene	1.297	1.265	2.5	98	0.00	16.33
111	n-butylbenzene	1.281	1.266	1.2	97	0.00	16.21
112	hexachloroethane	0.487	0.489	-0.4	98	0.00	16.61
113	1,2-dibromo-3-chloropropane	0.123	0.120	2.4	97	0.00	17.15
114	1,3,5-Trichlorobenzene	1.089	1.067	2.0	97	0.00	17.35
115	1,2,4-trichlorobenzene	0.939	0.916	2.4	97	0.00	18.02
116	hexachlorobutadiene	0.588	0.593	-0.9	98	0.00	18.14
117	naphthalene	1.840	1.817	1.3	98	0.00	18.30
118	1,2,3-trichlorobenzene	0.834	0.824	1.2	97	0.00	18.56

(#) = Out of Range  
I183734.D MI7422.M

SPCC's out = 0 CCC's out = 0  
Mon Apr 29 11:06:22 2013 RPT1

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**Initial Calibration Verification**

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample: VI7422-ICV7422

Lab FileID: I183737.D

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\VI7422\I183737.D Vial: 44  
 Acq On : 26 Apr 2013 11:36 pm Operator: SCOTTM  
 Sample : ICV7422-50 (acetates) Inst : MSI  
 Misc : MS47200,VI7422,,,,,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MI7422.M (RTE Integrator)  
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 Last Update : Mon Apr 29 11:03:09 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	96	0.00	7.19
2	tertiary butyl alcohol		-----	NA			
3	iso-butyl alcohol		-----	NA			
4	1,4-dioxane		-----	NA			
5	I pentafluorobenzene	1.000	1.000	0.0	100	0.00	9.45
6	chlorodifluoromethane		-----	NA			
7	dichlorodifluoromethane		-----	NA			
8	chloromethane		-----	NA			
9	vinyl chloride		-----	NA			
10	bromomethane		-----	NA			
11	chloroethane		-----	NA			
12	trichlorofluoromethane		-----	NA			
13	ethyl ether		-----	NA			
14	acrolein		-----	NA			
15	freon 113		-----	NA			
16	1,1-dichloroethene		-----	NA			
17	acetone		-----	NA			
18	iodomethane		-----	NA			
19	carbon disulfide		-----	NA			
20	methyl acetate	0.041	0.041	0.0	96	0.00	7.02
21	allyl chloride		-----	NA			
23	methylene chloride		AvgRF	CCRF	% Dev		
24	methyl tert butyl ether		-----	NA			
25	acrylonitrile		-----	NA			
26	trans-1,2-dichloroethene		-----	NA			
27	hexane		-----	NA			
28	di-isopropyl ether		-----	NA			
29	vinyl acetate		-----	NA			
30	1,1-dichloroethane		-----	NA			
31	chloroprene		-----	NA			
32	ethyl tert-butyl ether		-----	NA			
33	2-butanone		-----	NA			
34	ethyl acetate		-----	NA			
35	2,2-dichloropropane		-----	NA			
36	cis-1,2-dichloroethene		-----	NA			
37	methacrylonitrile		-----	NA			
38	propionitrile		-----	NA			
39	bromochloromethane		-----	NA			
40	tetrahydrofuran		-----	NA			

**Initial Calibration Verification**

Job Number: JB38251

Sample: VI7422-ICV7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183737.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

41	chloroform		-----	NA-----							
43 S	dibromofluoromethane (s)		-----	NA-----							
44	1,1,1-trichloroethane		-----	NA-----							
46 I	1,4-difluorobenzene	1.000	1.000	0.0	98	0.00	10.37				
47 s	1,2-dichloroethane-d4 (s)		-----	NA-----							
48	carbon tetrachloride		-----	NA-----							
49	1,1-dichloropropene		-----	NA-----							
50	isopropyl acetate		-----	NA-----							
51	benzene		-----	NA-----							
52	2,2,4-trimethylpentane		-----	NA-----							
53	tert-amyl methyl ether		-----	NA-----							
54	1,2-dichloroethane		-----	NA-----							
55	heptane		-----	NA-----							
56	n-butyl alcohol		-----	NA-----							
57	trichloroethene		-----	NA-----							
58	ethyl acrylate		-----	NA-----							
59	methyl methacrylate		-----	NA-----							
60	1,2-dichloropropane		-----	NA-----							
61	methylcyclohexane		-----	NA-----							
62	dibromomethane		-----	NA-----							
63	bromodichloromethane		-----	NA-----							
64	2-nitropropane		-----	NA-----							
65	2-chloroethyl vinyl ether		-----	NA-----							
66	epichlorohydrin		-----	NA-----							
67	cis-1,3-dichloropropene		-----	NA-----							
68	4-methyl-2-pentanone		-----	NA-----							
69	3-methyl-1-butanol		-----	NA-----							
70	toluene		-----	NA-----							
71	trans-1,3-dichloropropene		-----	NA-----							
72	ethyl methacrylate		-----	NA-----							
73	1,1,2-trichloroethane		-----	NA-----							
74	2-hexanone		-----	NA-----							
75 I	chlorobenzene-d5	1.000	1.000	0.0	98	0.00	13.54				
76 S	toluene-d8 (s)		-----	NA-----							
77	tetrachloroethene		-----	NA-----							
78	1,3-dichloropropane		-----	NA-----							
79	butyl acetate		-----	NA-----							
80	3,3-Dimethyl-1-Butanol		-----	NA-----							
81	dibromochloromethane		-----	NA-----							
82	1,2-dibromoethane		-----	NA-----							
83	chlorobenzene		-----	NA-----							
84	1,1,1,2-tetrachloroethane		-----	NA-----							
85	ethylbenzene		-----	NA-----							
86	m,p-xylene		-----	NA-----							
87	o-xylene		-----	NA-----							
88	styrene		-----	NA-----							
89	bromoform		-----	NA-----							
90 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	94	0.00	15.89				
91 S	4-bromofluorobenzene (s)		-----	NA-----							
92	isopropylbenzene		-----	NA-----							
93	cyclohexanone		-----	NA-----							
94	1,1,2,2-tetrachloroethane		-----	NA-----							
95	trans-1,4-dichloro-2-bute		-----	NA-----							
96	1,2,3-trichloropropane		-----	NA-----							
97	n-propylbenzene		-----	NA-----							

# Initial Calibration Verification

Page 3 of 3

Job Number: JB38251

Sample: VI7422-ICV7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I183737.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

98	bromobenzene	-----NA-----
99	2-chlorotoluene	-----NA-----
100	4-chlorotoluene	-----NA-----
101	1,3,5-trimethylbenzene	-----NA-----
102	tert-butylbenzene	-----NA-----
103	pentachloroethane	-----NA-----
104	1,2,4-trimethylbenzene	-----NA-----
105	sec-butylbenzene	-----NA-----
106	p-isopropyltoluene	-----NA-----
107	benzyl chloride	-----NA-----
108	1,3-dichlorobenzene	-----NA-----
109	1,4-dichlorobenzene	-----NA-----
110	1,2-dichlorobenzene	-----NA-----
111	n-butylbenzene	-----NA-----
112	hexachloroethane	-----NA-----
113	1,2-dibromo-3-chloropropane	-----NA-----
114	1,3,5-Trichlorobenzene	-----NA-----
115	1,2,4-trichlorobenzene	-----NA-----
116	hexachlorobutadiene	-----NA-----
117	naphthalene	-----NA-----
118	1,2,3-trichlorobenzene	-----NA-----

(#) = Out of Range  
I183734.D MI7422.M

SPCC's out = 0 CCC's out = 0  
Mon Apr 29 11:07:02 2013 RPT1

6.9.8  
6

# Continuing Calibration Summary

Page 1 of 3

Job Number: JB38251

Sample: VI7467-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I184801.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\VI7466\I184801.D Vial: 2  
 Acq On : 1 Jun 2013 7:45 am Operator: SCOTTM  
 Sample : cc7422-20 Inst : MSI  
 Misc : MS48976,VI7467,5.0,,,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\1\METHODS\MI7422.M (RTE Integrator)  
 Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 Last Update : Tue May 21 17:53:40 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.010 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1	I Tert Butyl Alcohol-d9	1.000	1.000	0.0	120	-0.03	7.17
2	tertiary butyl alcohol	0.105	0.097	7.6	109	-0.02	7.30
3	iso-butyl alcohol	0.022	0.020	9.1	100	-0.02	9.97
4	1,4-dioxane	0.008	0.007#	12.5	90	-0.01	11.08
5	I pentafluorobenzene	1.000	1.000	0.0	97	-0.02	9.43
6	chlorodifluoromethane	0.364	0.490	-34.6#	156	0.00	3.77
7	dichlorodifluoromethane	0.513	0.710	-38.4#	154	0.00	3.75
8	chloromethane	0.464	0.479	-3.2	118	0.00	4.10
9	vinyl chloride	0.550	0.568	-3.3	112	0.00	4.35
10	bromomethane	0.317	0.328	-3.5	108	0.00	5.00
11	chloroethane	0.219	0.226	-3.2	107	0.00	5.18
12	trichlorofluoromethane	0.569	0.793	-39.4#	147	0.00	5.63
13	ethyl ether	0.181	0.147	18.8	84	0.00	6.07
14	acrolein	0.050	0.039	22.0#	84	-0.02	6.30
15	freon 113	0.245	0.261	-6.5	111	0.00	6.46
16	1,1-dichloroethene	0.485	0.537	-10.7	117	0.00	6.47
17	acetone	0.023	0.022	4.3	101	0.00	6.53
18	iodomethane	0.633	0.602	4.9	96	-0.01	6.74
19	carbon disulfide	1.171	1.104	5.7	99	0.00	6.87
20	methyl acetate	0.041	0.035	14.6	83	-0.01	7.01
21	allyl chloride	0.195	0.181	7.2	96	0.00	7.01
22	----- acetonitrile	True 200.000	Calc. 177.756	% Drift 11.1	97	-0.01	7.01
23	----- AvgRF	CCRF	% Dev				
24	methylene chloride	0.382	0.332	13.1	91	0.00	7.20
25	methyl tert butyl ether	0.955	0.961	-0.6	106	-0.02	7.55
26	acrylonitrile	0.084	0.074	11.9	88	-0.02	7.53
27	trans-1,2-dichloroethene	0.390	0.324	16.9	93	0.00	7.59
28	hexane	0.437	0.405	7.3	107	0.00	7.90
29	di-isopropyl ether	1.004	0.905	9.9	95	-0.01	8.16
30	vinyl acetate	0.200	0.193	3.5	104	-0.01	8.16
31	1,1-dichloroethane	0.598	0.593	0.8	102	-0.01	8.15
32	chloroprene	0.449	0.504	-12.2	118	-0.01	8.27
33	ethyl tert-butyl ether	1.047	1.044	0.3	103	-0.01	8.63
34	2-butanone	0.031	0.031	0.0	104	0.00	8.88
35	ethyl acetate	0.034	0.030	11.8	89	0.00	8.90
36	2,2-dichloropropane	0.527	0.636	-20.7#	133	-0.02	8.90
37	cis-1,2-dichloroethene	0.406	0.343	15.5	88	-0.02	8.90
	methacrylonitrile	0.110	0.091	17.3	85	-0.02	9.15

# Continuing Calibration Summary

Page 2 of 3

Job Number: JB38251

Sample: VI7467-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.  
Project: Sun-Marcus Hook Refinery, Philadelphia, PA

Lab FileID: I184801.D

38	propionitrile	0.033	0.029	12.1	87	-0.02	8.96
39	bromochloromethane	0.184	0.161	12.5	89	-0.01	9.21
40	tetrahydrofuran	0.088	0.074	15.9	92	-0.01	9.26
41	chloroform	0.621	0.661	-6.4	111	-0.01	9.28
42	tert-Butyl Formate	0.248	0.264	-6.5	111	-0.01	9.31
43 S	dibromofluoromethane (s)	0.382	0.362	5.2	98	-0.01	9.47
44	1,1,1-trichloroethane	0.535	0.669	-25.0#	127	-0.01	9.53
45	cyclohexane	0.504	0.461	8.5	96	-0.01	9.61
46 I	1,4-difluorobenzene	1.000	1.000	0.0	94	-0.01	10.36
47 S	1,2-dichloroethane-d4 (s)	0.260	0.294	-13.1	116	-0.02	9.89
48	carbon tetrachloride	0.314	0.441	-40.4#	137	-0.01	9.74
49	1,1-dichloropropene	0.318	0.344	-8.2	108	-0.01	9.71
50	isopropyl acetate	0.078	0.077	1.3	98	-0.01	9.91
51	benzene	0.992	0.884	10.9	90	-0.02	9.97
52	2,2,4-trimethylpentane	0.827	0.807	2.4	101	-0.02	9.98
53	tert-amyl methyl ether	0.696	0.694	0.3	100	-0.01	10.02
54	1,2-dichloroethane	0.276	0.361	-30.8#	128	-0.02	9.98
55	heptane	0.163	0.125	23.3#	81	-0.01	10.17
56	n-butyl alcohol	0.005	0.004#	20.0	88	-0.01	10.49
57	trichloroethene	0.244	0.253	-3.7	103	-0.01	10.70
58	ethyl acrylate	0.333	0.354	-6.3	113	0.00	10.93
59	methyl methacrylate	0.121	0.105	13.2	87	-0.02	10.97
60	1,2-dichloropropane	0.236	0.209	11.4	88	-0.01	10.96
61	methylcyclohexane	0.396	0.407	-2.8	103	-0.01	10.93
62	dibromomethane	0.138	0.140	-1.4	100	-0.01	11.12
63	bromodichloromethane	0.306	0.343	-12.1	109	-0.01	11.25
64	2-nitropropane	0.063	0.077	-22.2#	122	-0.01	11.47
65	2-chloroethyl vinyl ether	0.087	0.086	1.1	100	-0.01	11.50
66	epichlorohydrin	0.016	0.016	0.0	101	0.00	11.62
67	cis-1,3-dichloropropene	0.378	0.362	4.2	94	-0.01	11.72
68	4-methyl-2-pantanone	0.068	0.062	8.8	89	0.00	11.82
69	3-methyl-1-butanol	0.005	0.004#	20.0	94	0.00	11.84
70	toluene	1.006	0.915	9.0	90	-0.01	12.08
71	trans-1,3-dichloropropene	0.329	0.342	-4.0	104	-0.01	12.28
72	ethyl methacrylate	0.239	0.203	15.1	83	0.00	12.29
73	1,1,2-trichloroethane	0.160	0.139	13.1	86	0.00	12.49
74	2-hexanone	0.060	0.054	10.0	88	0.00	12.67
75 I	chlorobenzene-d5	1.000	1.000	0.0	94	-0.01	13.52
76 S	toluene-d8 (s)	1.114	1.091	2.1	93	-0.01	12.01
77	tetrachloroethene	0.325	0.324	0.3	98	-0.01	12.67
78	1,3-dichloropropane	0.364	0.349	4.1	92	-0.01	12.68
79	butyl acetate	0.140	0.122	12.9	86	0.00	12.76
80	3,3-Dimethyl-1-Butanol	0.021	0.018	14.3	89	-0.01	12.84
81	dibromochloromethane	0.296	0.316	-6.8	103	-0.01	12.94
82	1,2-dibromoethane	0.247	0.225	8.9	89	-0.01	13.09
83	chlorobenzene	0.822	0.745	9.4	88	0.00	13.56
84	1,1,1,2-tetrachloroethane	0.295	0.306	-3.7	101	0.00	13.62
85	ethylbenzene	1.378	1.323	4.0	95	-0.01	13.61
86	m,p-xylene	0.537	0.493	8.2	90	0.00	13.72
87	o-xylene	0.529	0.479	9.5	87	0.00	14.14
88	styrene	0.880	0.763	13.3	84	0.00	14.15
89	bromoform	0.196	0.199	-1.5	99	-0.01	14.41
90 I	1,4-dichlorobenzene-d4	1.000	1.000	0.0	93	-0.01	15.88
91 S	4-bromofluorobenzene (s)	0.718	0.758	-5.6	98	-0.01	14.69
92	isopropylbenzene	2.501	2.437	2.6	95	0.00	14.49
93	cyclohexanone	0.000	0.063	0.0	0#	-0.01	14.64
94	1,1,2,2-tetrachloroethane	0.578	0.514	11.1	87	-0.01	14.79

6.6.9  
6

**Continuing Calibration Summary**

Job Number: JB38251

Sample: VI7467-CC7422

Account: AQTPAW Aquaterra Technologies, Inc.

Lab FileID: I184801.D

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

95	trans-1,4-dichloro-2-bute	0.133	0.149	-12.0	109	-0.01	14.83
96	1,2,3-trichloropropane	0.131	0.139	-6.1	103	-0.02	14.86
97	n-propylbenzene	3.008	2.861	4.9	95	-0.01	14.90
98	bromobenzene	0.689	0.616	10.6	86	-0.01	14.88
99	2-chlorotoluene	0.647	0.588	9.1	90	0.00	15.05
100	4-chlorotoluene	1.958	1.820	7.0	96	-0.01	15.15
101	1,3,5-trimethylbenzene	2.191	2.174	0.8	97	0.00	15.06
102	tert-butylbenzene	1.853	1.794	3.2	95	-0.01	15.41
103	pentachloroethane	0.437	0.424	3.0	93	0.00	15.49
104	1,2,4-trimethylbenzene	2.255	2.172	3.7	95	-0.01	15.46
105	sec-butylbenzene	2.859	2.713	5.1	93	0.00	15.64
106	p-isopropyltoluene	2.404	2.262	5.9	92	0.00	15.76
107	benzyl chloride	1.115	1.271	-14.0	118	-0.01	16.03
108	1,3-dichlorobenzene	1.368	1.194	12.7	86	-0.01	15.83
109	1,4-dichlorobenzene	1.388	1.217	12.3	86	0.00	15.91
110	1,2-dichlorobenzene	1.297	1.146	11.6	85	-0.01	16.32
111	n-butylbenzene	1.281	1.180	7.9	91	0.00	16.20
112	hexachloroethane	0.489	0.496	-1.4	99	0.00	16.60
113	1,2-dibromo-3-chloropropane	0.123	0.113	8.1	87	-0.01	17.14
114	1,3,5-Trichlorobenzene	1.089	0.988	9.3	87	-0.01	17.35
115	1,2,4-trichlorobenzene	0.939	0.783	16.6	81	0.00	18.01
116	hexachlorobutadiene	0.588	0.592	-0.7	97	0.00	18.13
117	naphthalene	1.840	1.490	19.0	74	0.00	18.29
118	1,2,3-trichlorobenzene	0.834	0.691	17.1	78	0.00	18.55

(#) = Out of Range  
 I183735.D MI7422.M

SPCC's out = 0 CCC's out = 0  
 Mon Jun 03 11:01:01 2013 RPT1



## GC/MS Volatiles

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### Raw Data

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7

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\  
 Data File : d209729.D  
 Acq On : 6 Jun 2013 4:32 am  
 Operator : EmilyT  
 Sample : jb38251-1  
 Misc : ms49166, vd8559, 6.3,,100,10,1  
 ALS Vial : 84 Sample Multiplier: 1

Quant Time: Jun 06 08:59:36 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Thu Jun 06 07:36:20 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.012	65	106966	500.00	ug/L	0.02
4) pentafluorobenzene	10.214	168	215226	50.00	ug/L	-0.01
53) 1,4-difluorobenzene	11.134	114	285896	50.00	ug/L	0.00
85) chlorobenzene-d5	14.476	117	267161	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.060	152	192396	50.00	ug/L	0.00

System Monitoring Compounds						
46) dibromofluoromethane (s)	10.245	113	72611	45.17	ug/L	0.00
Spiked Amount	50.000	Range 65 - 131		Recovery	= 90.34%	
47) 1,2-dichloroethane-d4 (s)	10.669	65	93661	46.93	ug/L	0.00
Spiked Amount	50.000	Range 70 - 121		Recovery	= 93.86%	
77) toluene-d8 (s)	12.844	98	355183	60.05	ug/L	0.00
Spiked Amount	50.000	Range 80 - 128		Recovery	= 120.10%	
101) 4-bromofluorobenzene (s)	15.757	95	248130	87.58	ug/L	0.00
Spiked Amount	50.000	Range 67 - 131		Recovery	= 175.16%#	

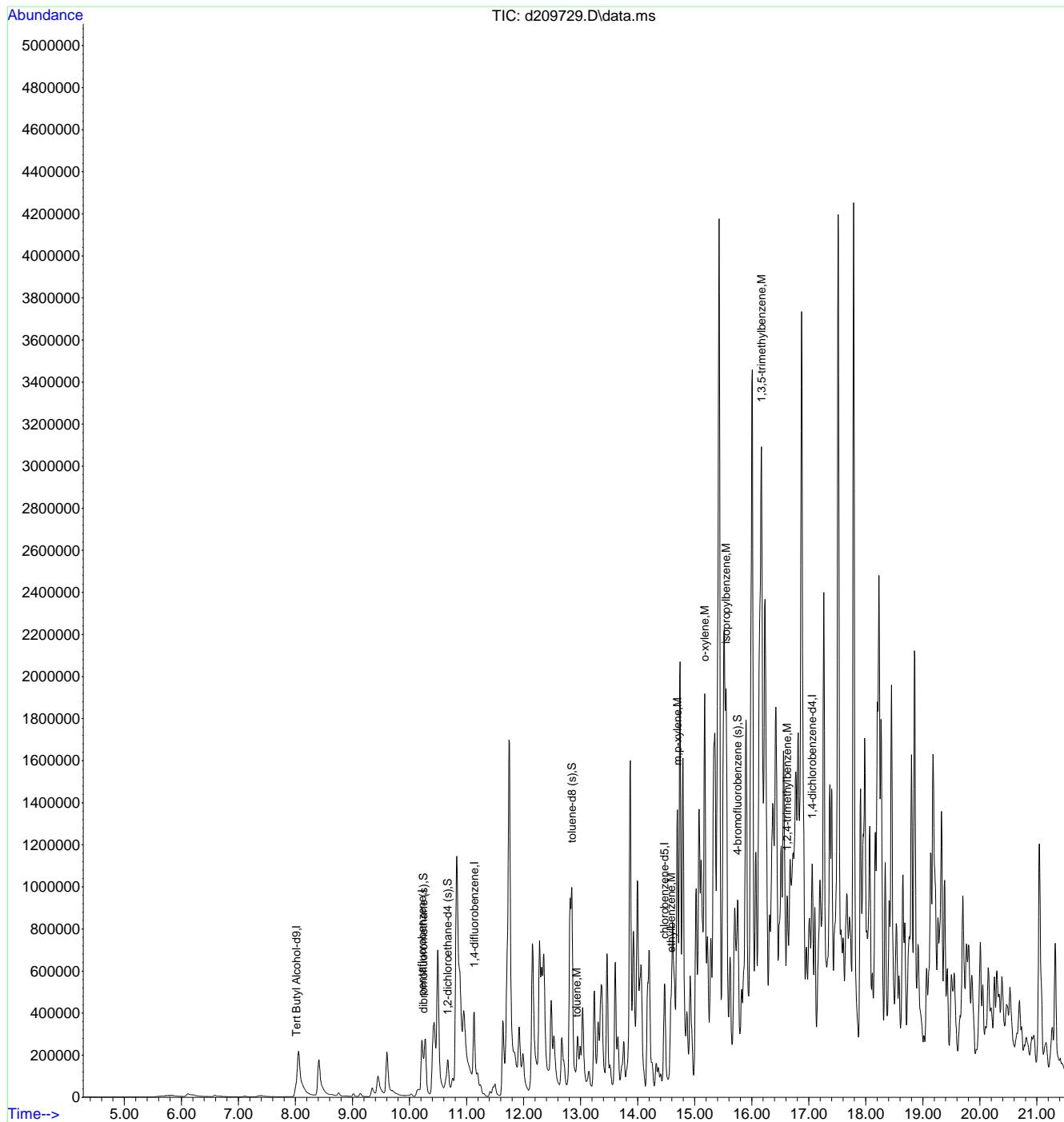
Target Compounds					Ovalue	
79) toluene	12.923	92	1606	0.39	ug/L	# 71
94) ethylbenzene	14.581	91	299679	37.60	ug/L	95
95) m,p-xylene	14.696	106	352522	106.84	ug/L	94
96) o-xylene	15.166	106	16219	4.96	ug/L	92
100) isopropylbenzene	15.554	105	645105	62.84	ug/L	99
111) 1,3,5-trimethylbenzene	16.176	105	44344	4.62	ug/L	98
114) 1,2,4-trimethylbenzene	16.615	105	138134	15.03	ug/L	99

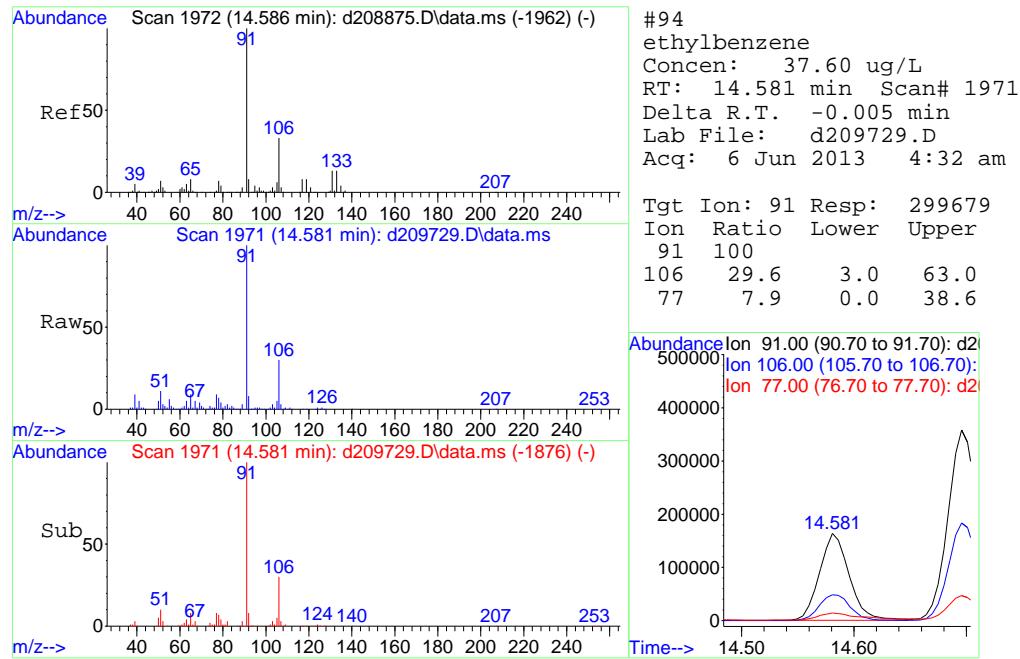
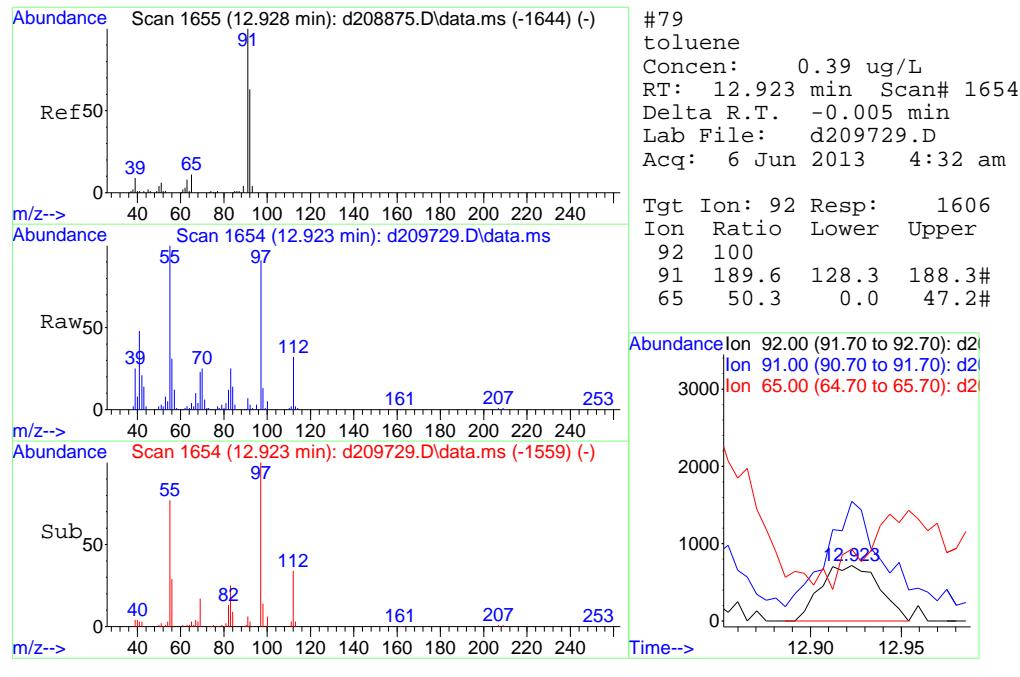
(#) = qualifier out of range (m) = manual integration (+) = signals summed

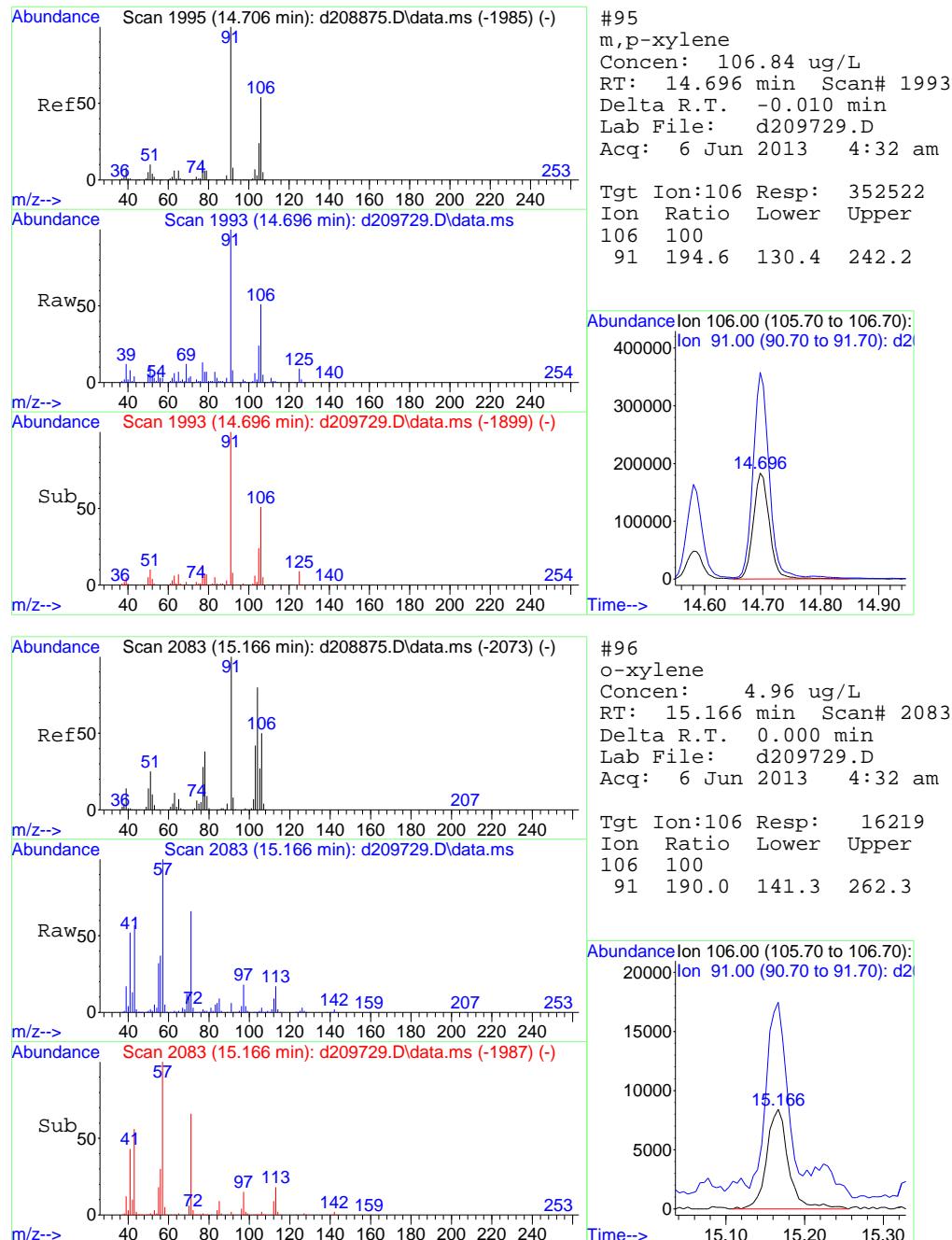
## Quantitation Report (QT Reviewed)

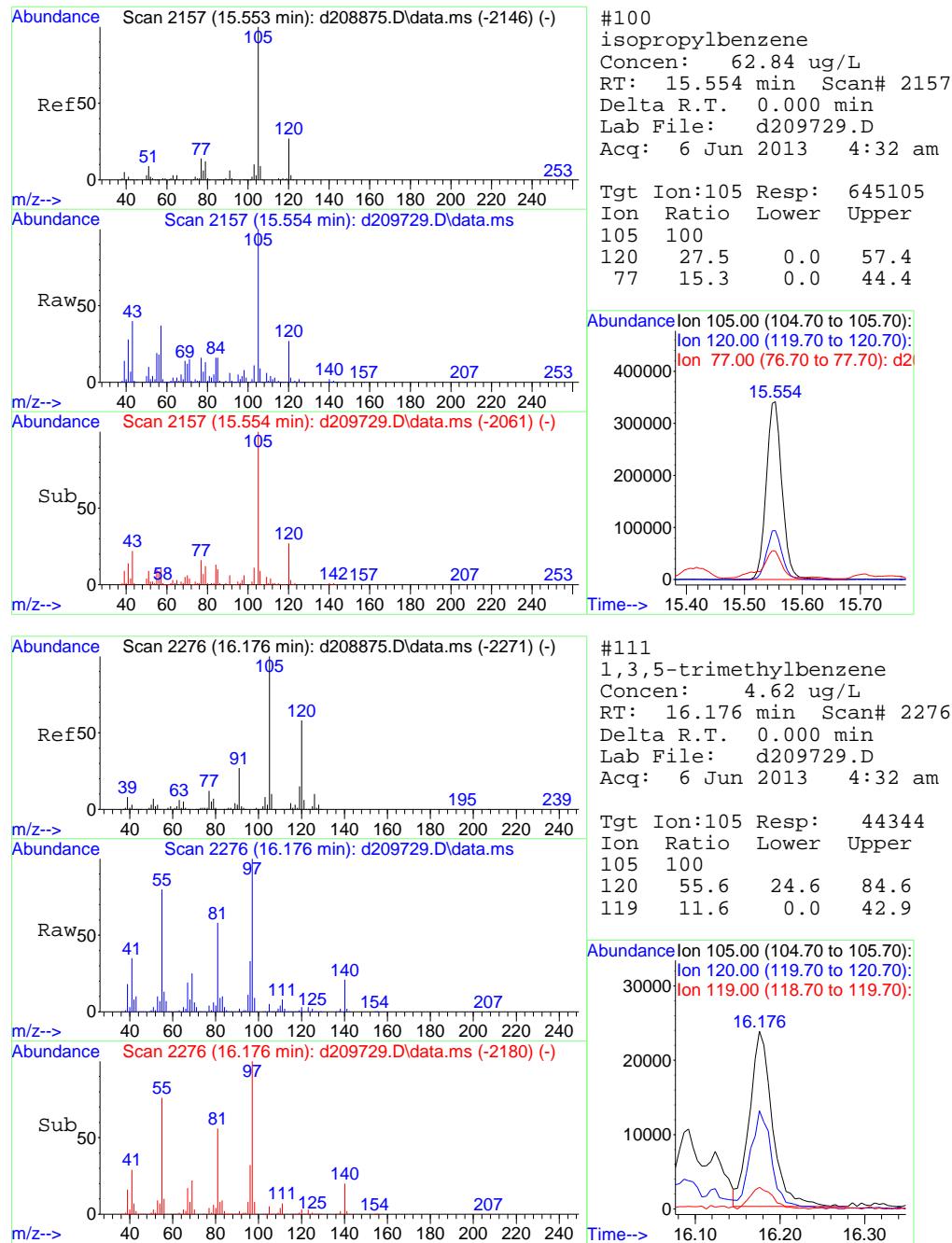
Data Path : C:\msdchem\1\DATA\  
 Data File : d209729.D  
 Acq On : 6 Jun 2013 4:32 am  
 Operator : EmilyT  
 Sample : jb38251-1  
 Misc : ms49166, vd8559, 6.3., ,100,10,1  
 ALS Vial : 84 Sample Multiplier: 1

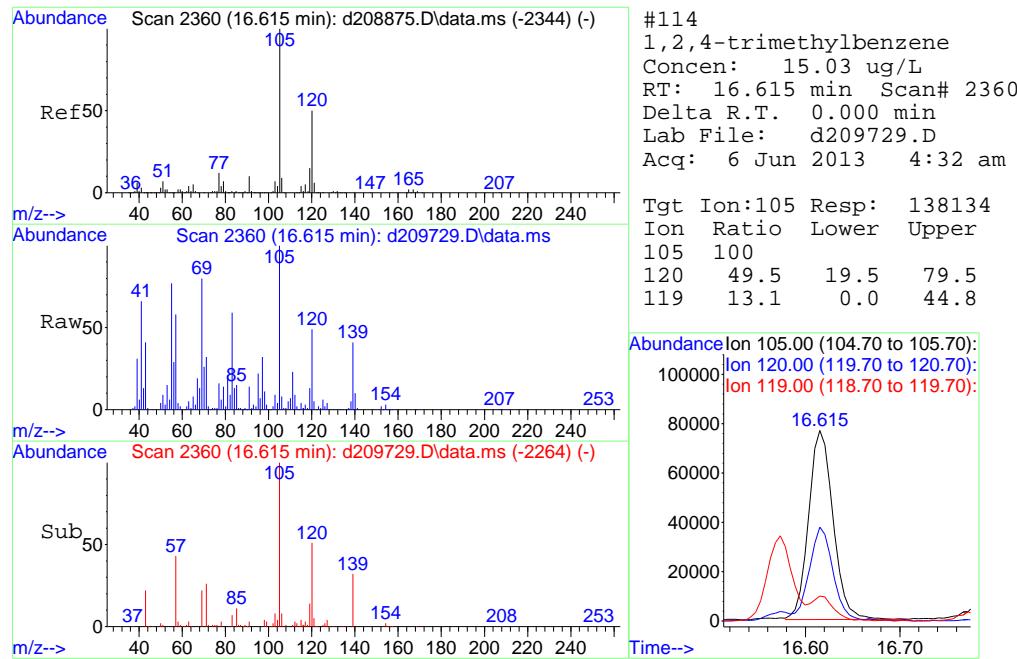
Quant Time: Jun 06 08:59:36 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Thu Jun 06 07:36:20 2013  
 Response via : Initial Calibration











## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\  
 Data File : d209871.D  
 Acq On : 10 Jun 2013 3:22 pm  
 Operator : EmilyT  
 Sample : JB38251-1CFS  
 Misc : ms49166, vd8566, 6.3,, 20, 10, 1  
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jun 12 10:13:27 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Tue May 28 12:32:06 2013  
 Response via : Initial Calibration

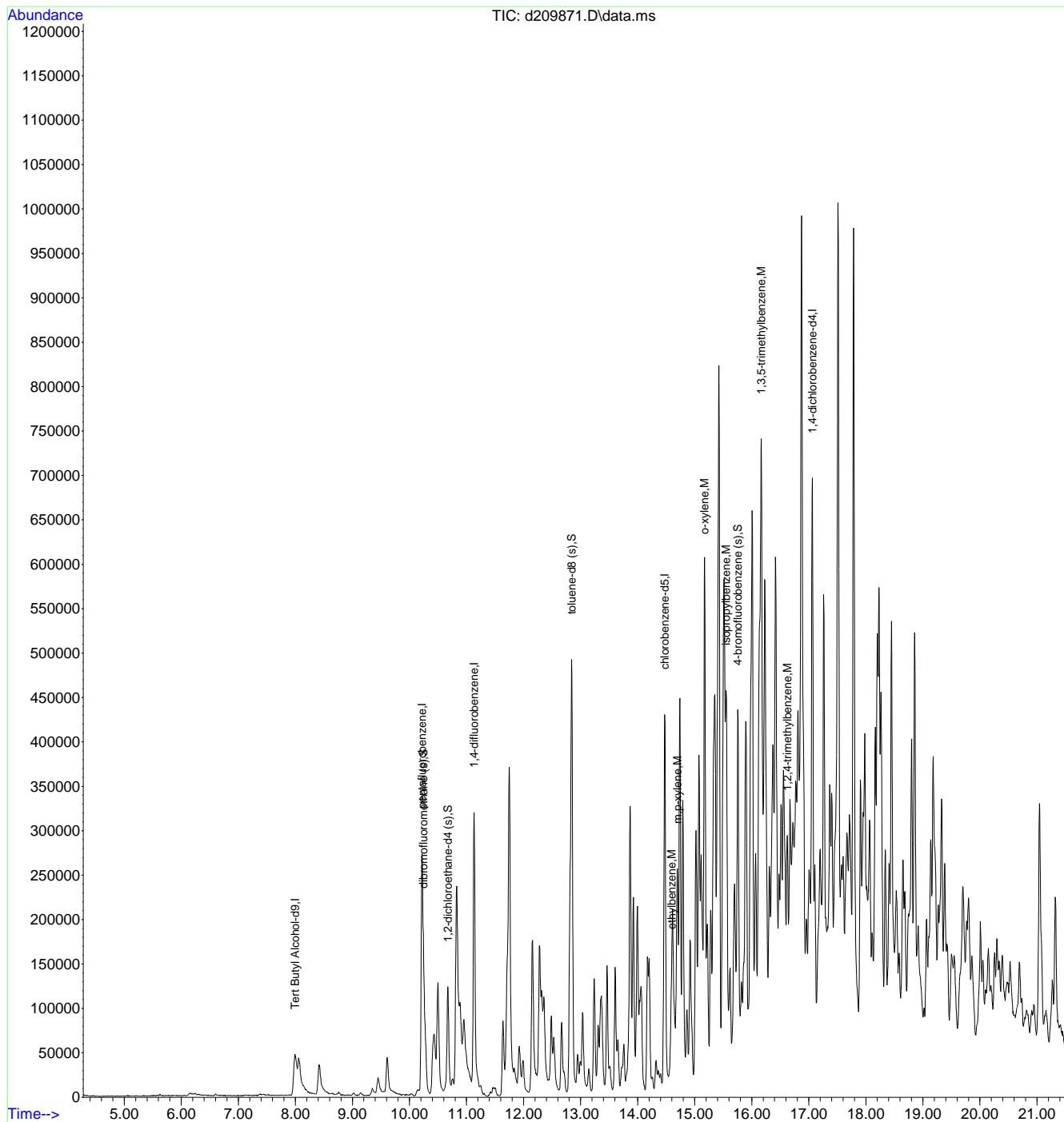
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.988	65	103928	500.00	ug/L	0.00
4) pentafluorobenzene	10.221	168	220843	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.131	114	291323	50.00	ug/L	0.00
85) chlorobenzene-d5	14.473	117	269598	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.062	152	170297	50.00	ug/L	0.00
<b>System Monitoring Compounds</b>						
46) dibromofluoromethane (s)	10.247	113	74178	44.97	ug/L	0.00
Spiked Amount 50.000	Range 65 - 131		Recovery = 89.94%			
47) 1,2-dichloroethane-d4 (s)	10.671	65	95135	46.46	ug/L	0.00
Spiked Amount 50.000	Range 70 - 121		Recovery = 92.92%			
77) toluene-d8 (s)	12.841	98	301736	50.06	ug/L	0.00
Spiked Amount 50.000	Range 80 - 128		Recovery = 100.12%			
101) 4-bromofluorobenzene (s)	15.755	95	134550	53.65	ug/L	0.00
Spiked Amount 50.000	Range 67 - 131		Recovery = 107.30%			
<b>Target Compounds</b>						
				Qvalue		
94) ethylbenzene	14.588	91	59916	7.45	ug/L	96
95) m,p-xylene	14.698	106	70517	21.18	ug/L	96
96) o-xylene	15.164	106	3273	0.99	ug/L	64
100) isopropylbenzene	15.551	105	127978	14.08	ug/L	97
111) 1,3,5-trimethylbenzene	16.173	105	10073	1.19	ug/L	96
114) 1,2,4-trimethylbenzene	16.618	105	38435	4.72	ug/L	96

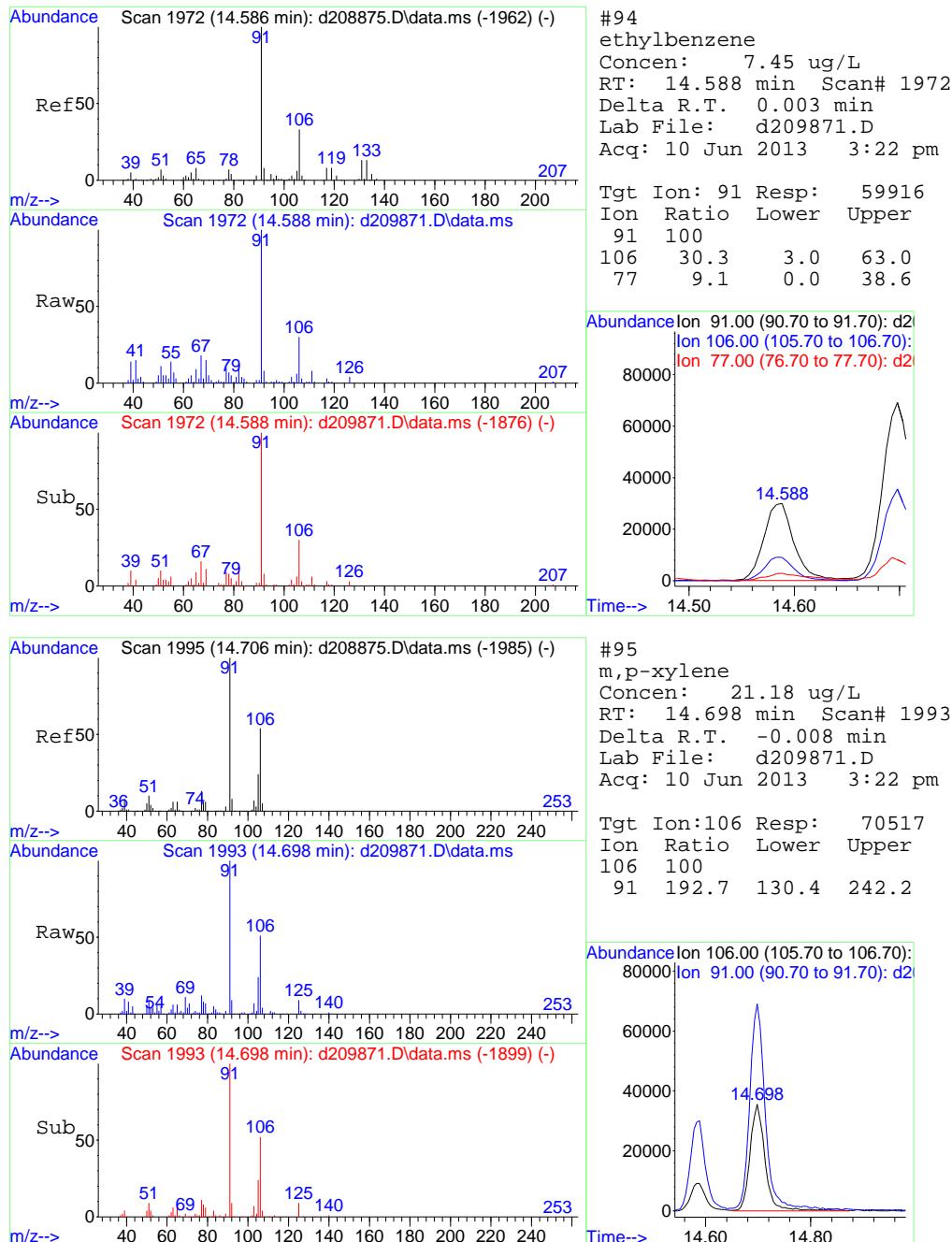
(#) = qualifier out of range (m) = manual integration (+) = signals summed

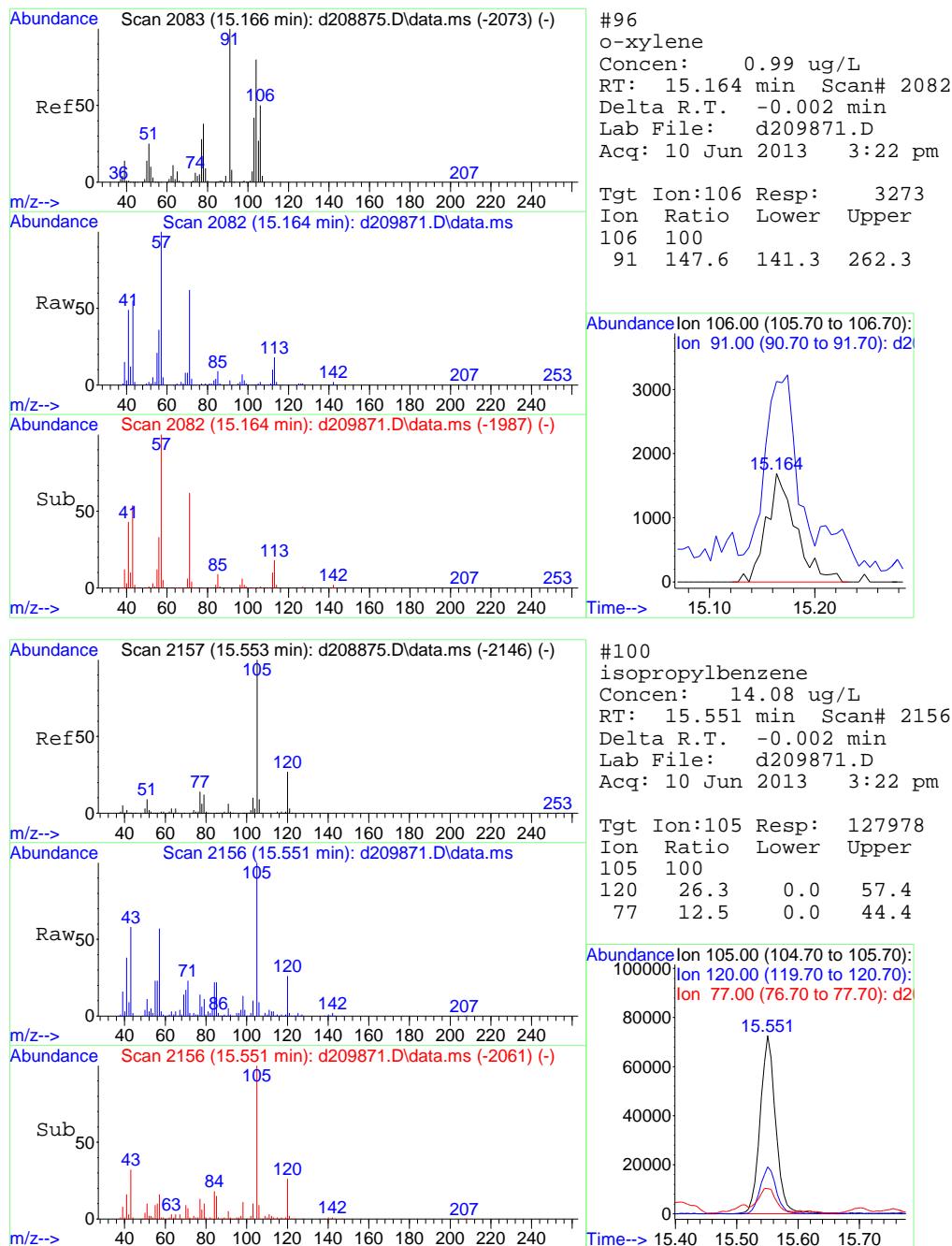
## Quantitation Report (QT Reviewed)

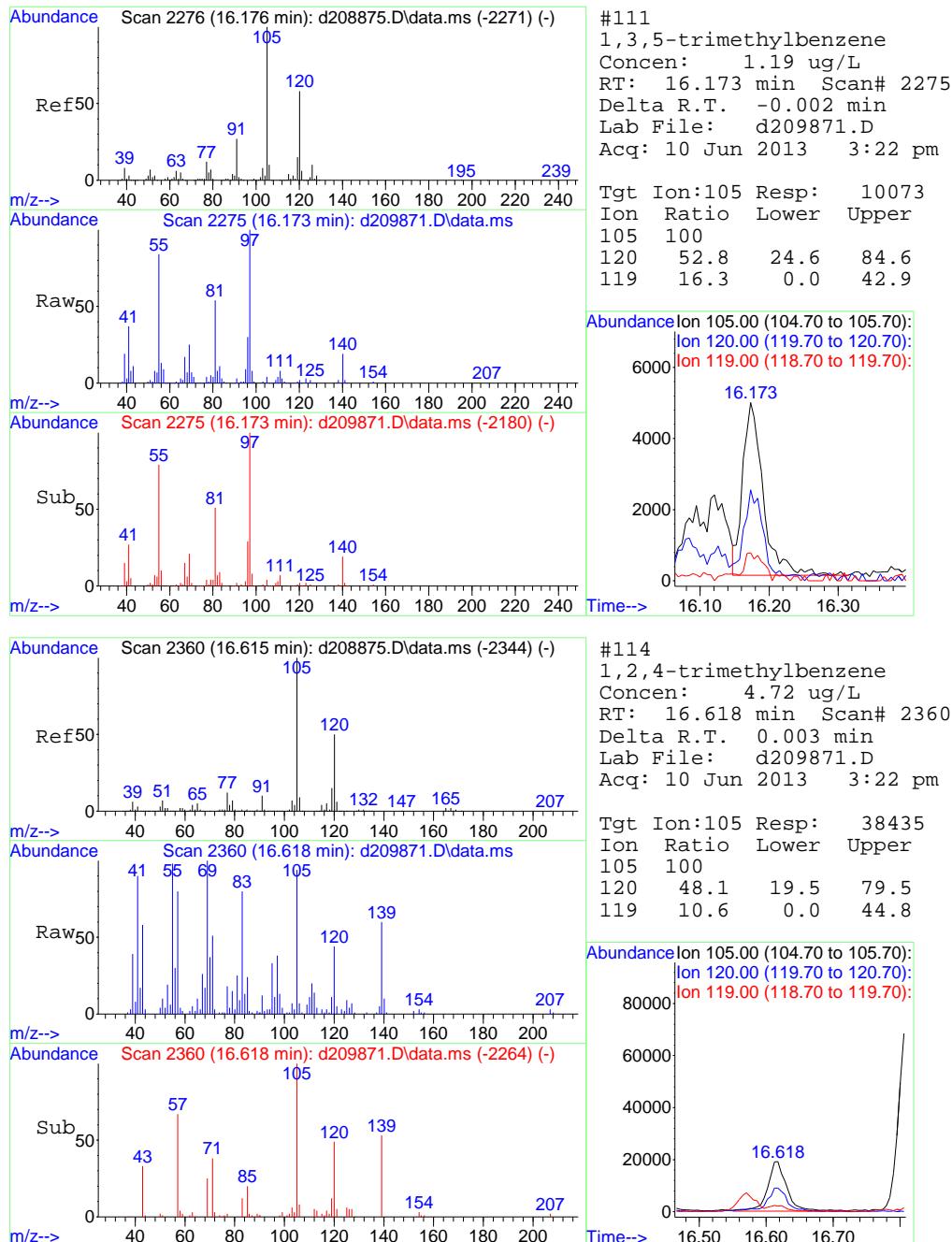
Data Path : C:\msdchem\1\DATA\  
 Data File : d209871.D  
 Acq On : 10 Jun 2013 3:22 pm  
 Operator : EmilyT  
 Sample : JB38251-1CFS  
 Misc : ms49166, vd8566, 6.3., ,20,10,1  
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jun 12 10:13:27 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Tue May 28 12:32:06 2013  
 Response via : Initial Calibration









## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7466\  
 Data File : I184811.D  
 Acq On : 1 Jun 2013 1:07 pm  
 Operator : SCOTTM  
 Sample : jb38251-2  
 Misc : MS49166,VI7467,5.3,,,1  
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Jun 04 08:36:48 2013  
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M  
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Tue May 21 17:53:40 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.175	65	64592	50.00	ug/L	-0.02
5) pentafluorobenzene	9.440	168	191359	50.00	ug/L	-0.01
46) 1,4-difluorobenzene	10.355	114	272297	50.00	ug/L	-0.01
75) chlorobenzene-d5	13.525	117	208016	50.00	ug/L	-0.01
90) 1,4-dichlorobenzene-d4	15.883	152	85925	50.00	ug/L	-0.01

## System Monitoring Compounds

43) dibromofluoromethane (s)	9.476	113	70312	48.07	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	96.14%
47) 1,2-dichloroethane-d4...	9.900	65	81342	57.40	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	114.80%
76) toluene-d8 (s)	12.013	98	231703	49.97	ug/L	0.00
Spiked Amount	50.000	Range	81 - 127	Recovery	=	99.94%
91) 4-bromofluorobenzene (s)	14.686	95	75934	61.53	ug/L	-0.01
Spiked Amount	50.000	Range	66 - 132	Recovery	=	123.06%

## Target Compounds

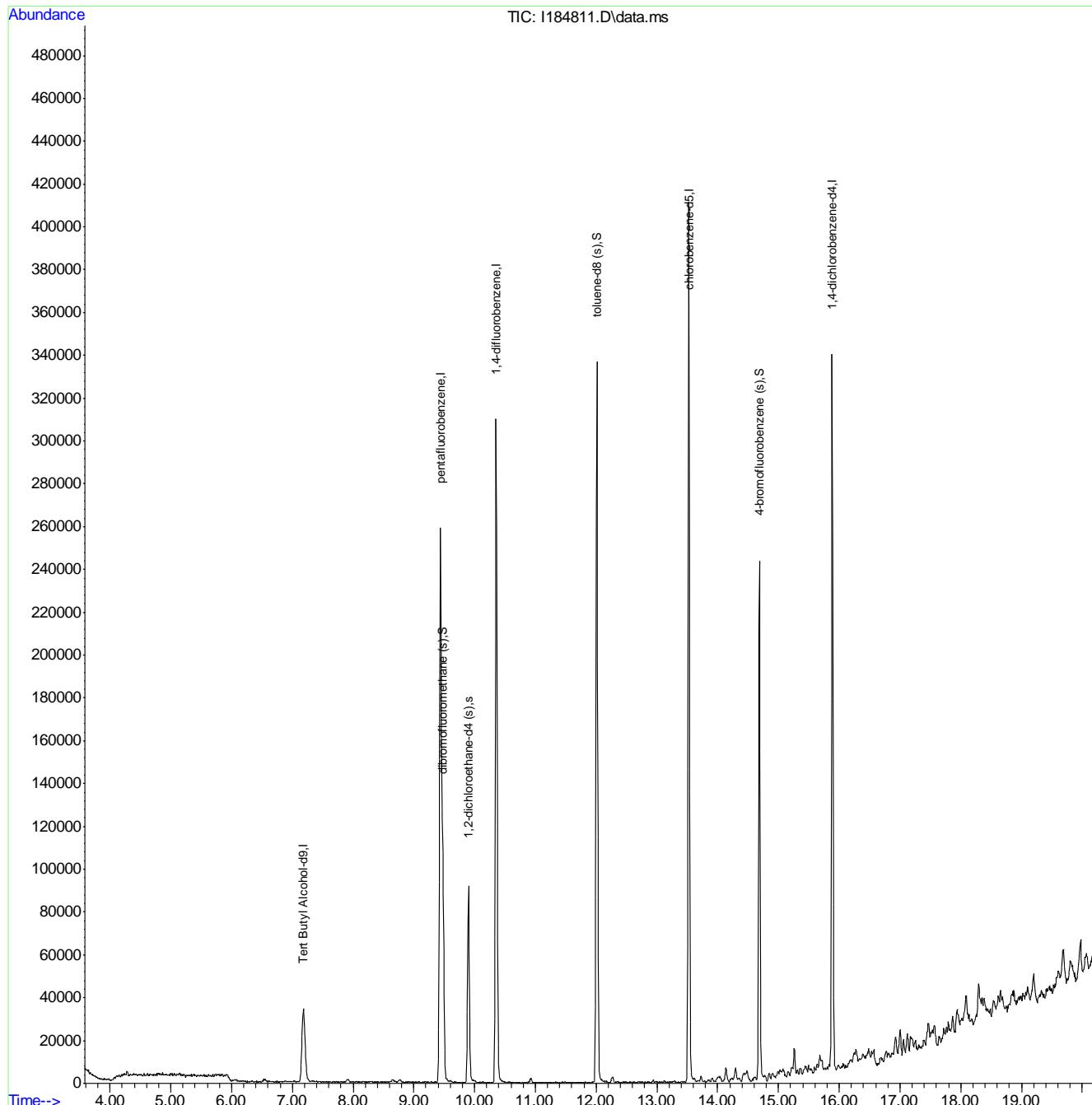
Qvalue

(#= qualifier out of range (m)= manual integration (+)= signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7466\  
 Data File : I184811.D  
 Acq On : 1 Jun 2013 1:07 pm  
 Operator : SCOTTM  
 Sample : jb38251-2  
 Misc : MS49166,VI7467,5.3,,,1  
 ALS Vial : 12 Sample Multiplier: 1

Quant Time: Jun 04 08:36:48 2013  
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M  
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Tue May 21 17:53:40 2013  
 Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7466\  
 Data File : I184812.D  
 Acq On : 1 Jun 2013 1:36 pm  
 Operator : SCOTTM  
 Sample : jb38251-3  
 Misc : MS49166,VI7467,5.5,,,1  
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jun 04 08:38:15 2013  
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M  
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Tue May 21 17:53:40 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.175	65	70567	50.00	ug/L	-0.02
5) pentafluorobenzene	9.440	168	199171	50.00	ug/L	-0.01
46) 1,4-difluorobenzene	10.355	114	279147	50.00	ug/L	-0.01
75) chlorobenzene-d5	13.525	117	222276	50.00	ug/L	-0.01
90) 1,4-dichlorobenzene-d4	15.883	152	108456	50.00	ug/L	-0.01

## System Monitoring Compounds

43) dibromofluoromethane (s)	9.476	113	71910	47.24	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	94.48%
47) 1,2-dichloroethane-d4...	9.895	65	83058	57.18	ug/L	-0.02
Spiked Amount	50.000	Range	70 - 122	Recovery	=	114.36%
76) toluene-d8 (s)	12.008	98	240094	48.46	ug/L	-0.01
Spiked Amount	50.000	Range	81 - 127	Recovery	=	96.92%
91) 4-bromofluorobenzene (s)	14.686	95	84506	54.25	ug/L	-0.01
Spiked Amount	50.000	Range	66 - 132	Recovery	=	108.50%

## Target Compounds

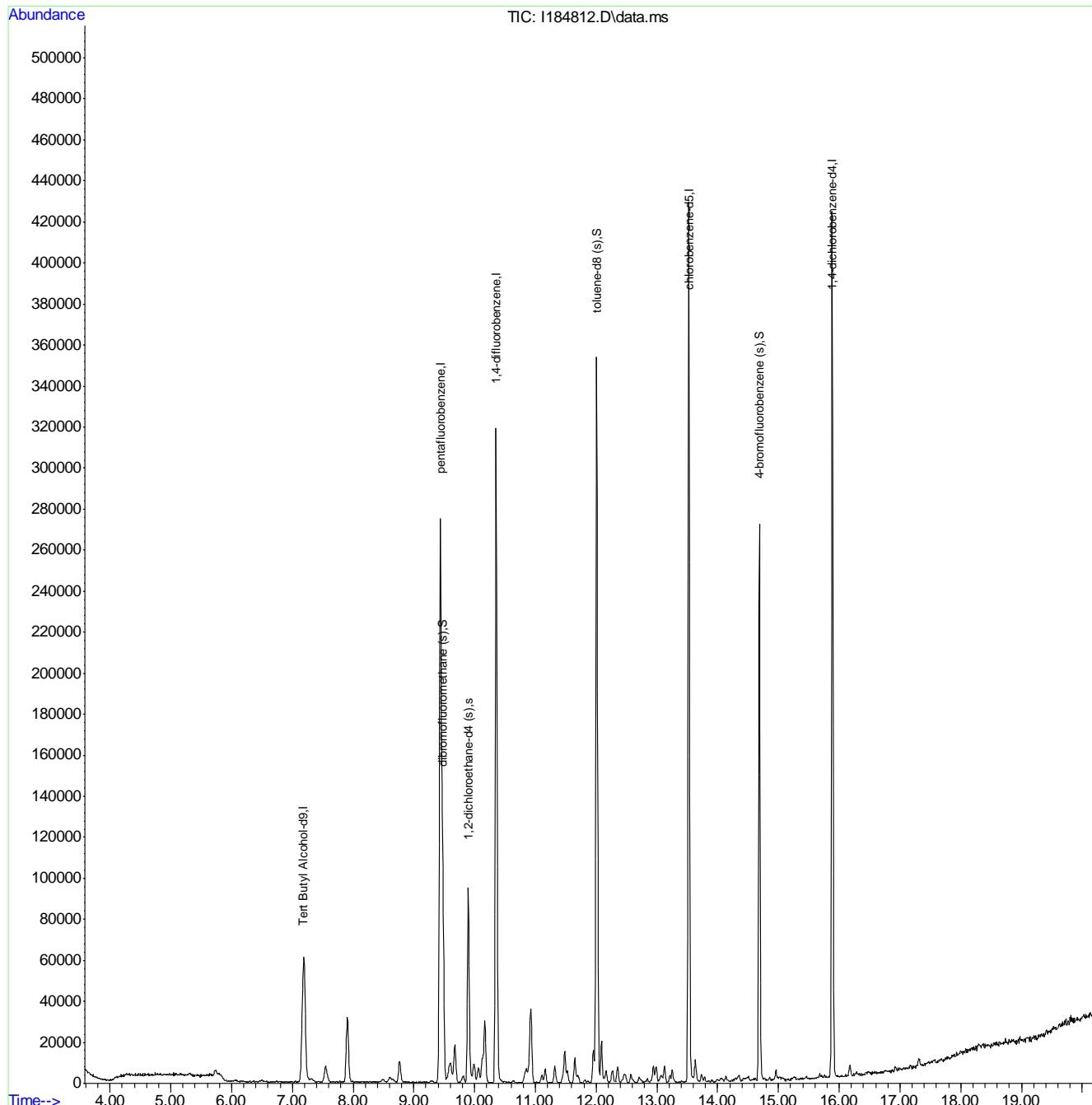
Qvalue

(#= qualifier out of range (m)= manual integration (+)= signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7466\  
 Data File : I184812.D  
 Acq On : 1 Jun 2013 1:36 pm  
 Operator : SCOTTM  
 Sample : jb38251-3  
 Misc : MS49166,VI7467,5.5,,,1  
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jun 04 08:38:15 2013  
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M  
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Tue May 21 17:53:40 2013  
 Response via : Initial Calibration



## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\  
 Data File : d209872.D  
 Acq On : 10 Jun 2013 3:51 pm  
 Operator : EmilyT  
 Sample : JB38251-4  
 Misc : ms49166, vd8566, 6.4,,100,10,1  
 ALS Vial : 14 Sample Multiplier: 1

Quant Time: Jun 12 11:04:03 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Tue May 28 12:32:06 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.011	65	121475	500.00	ug/L	0.02
4) pentafluorobenzene	10.218	168	220275	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.128	114	295264	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.475	117	271358	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.059	152	188812	50.00	ug/L	0.00

System Monitoring Compounds						
46) dibromofluoromethane (s)	10.244	113	74702	45.41	ug/L	0.00
Spiked Amount	50.000	Range 65 - 131	Recovery	= 90.82%		
47) 1,2-dichloroethane-d4 (s)	10.673	65	101594	49.74	ug/L	0.00
Spiked Amount	50.000	Range 70 - 121	Recovery	= 99.48%		
77) toluene-d8 (s)	12.843	98	399048	65.32	ug/L	0.00
Spiked Amount	50.000	Range 80 - 128	Recovery	= 130.64%#		
101) 4-bromofluorobenzene (s)	15.756	95	127374	45.81	ug/L	0.00
Spiked Amount	50.000	Range 67 - 131	Recovery	= 91.62%		

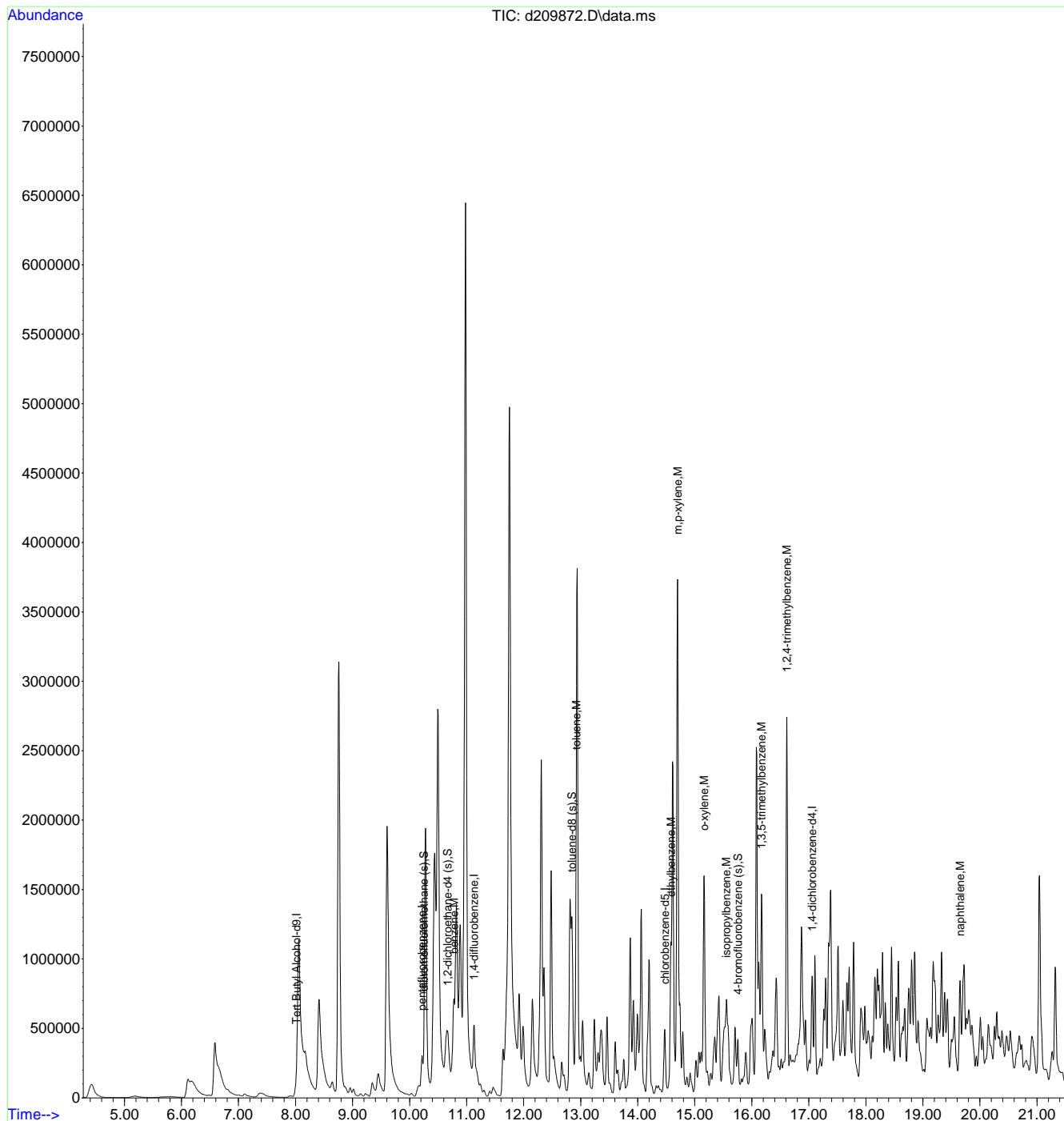
Target Compounds						Qvalue
62) benzene	10.777	78	509752	77.02	ug/L	99
79) toluene	12.916	92	306566	72.20	ug/L	99
94) ethylbenzene	14.580	91	817137	100.94	ug/L	99
95) m,p-xylene	14.700	106	1246186	371.86	ug/L	99
96) o-xylene	15.160	106	397982	119.88	ug/L	98
100) isopropylbenzene	15.547	105	139568	13.85	ug/L	100
111) 1,3,5-trimethylbenzene	16.175	105	573552	60.88	ug/L	97
114) 1,2,4-trimethylbenzene	16.614	105	1548555	171.66	ug/L	99
128) naphthalene	19.653	128	582156	85.10	ug/L	99

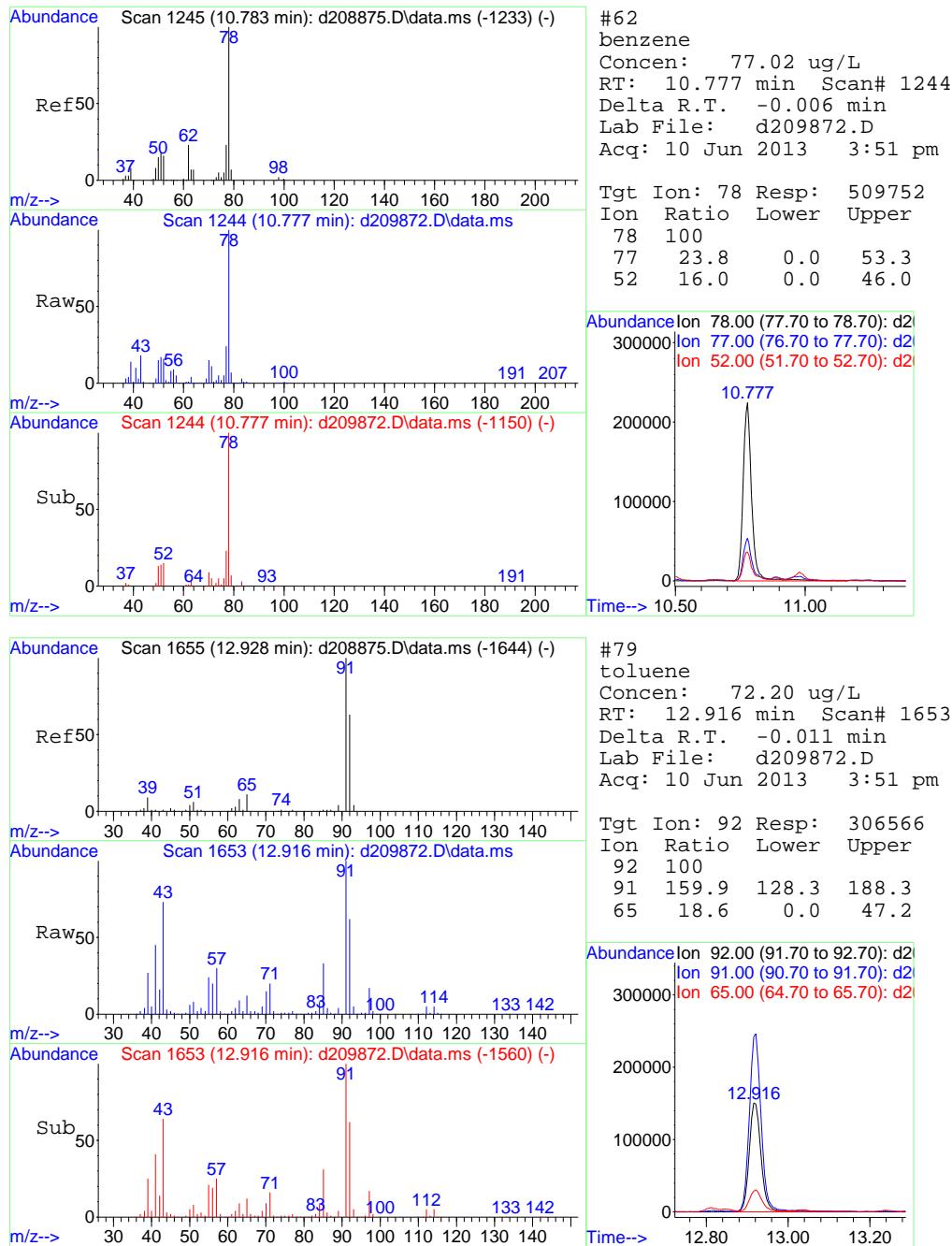
(#) = qualifier out of range (m) = manual integration (+) = signals summed

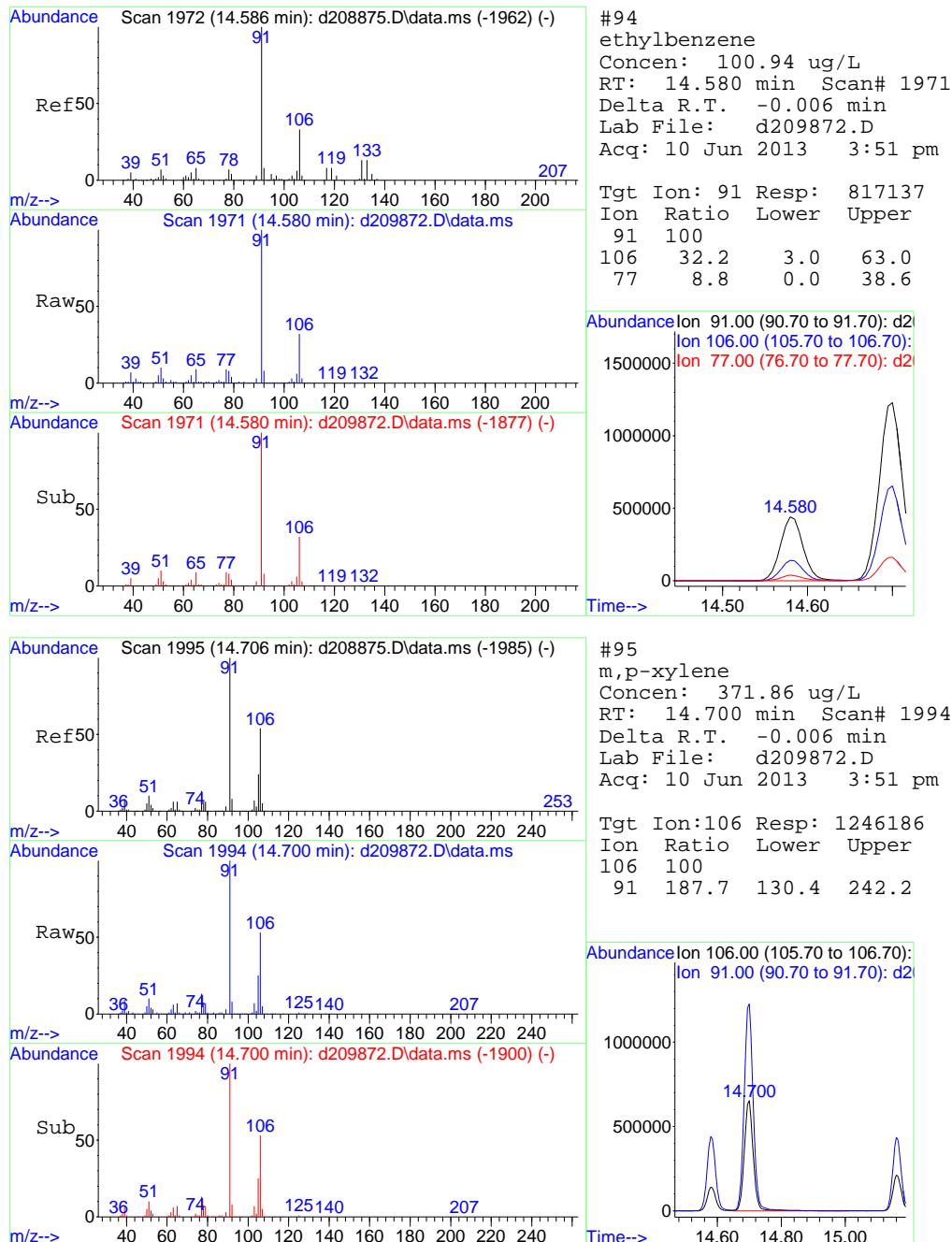
## Quantitation Report (QT Reviewed)

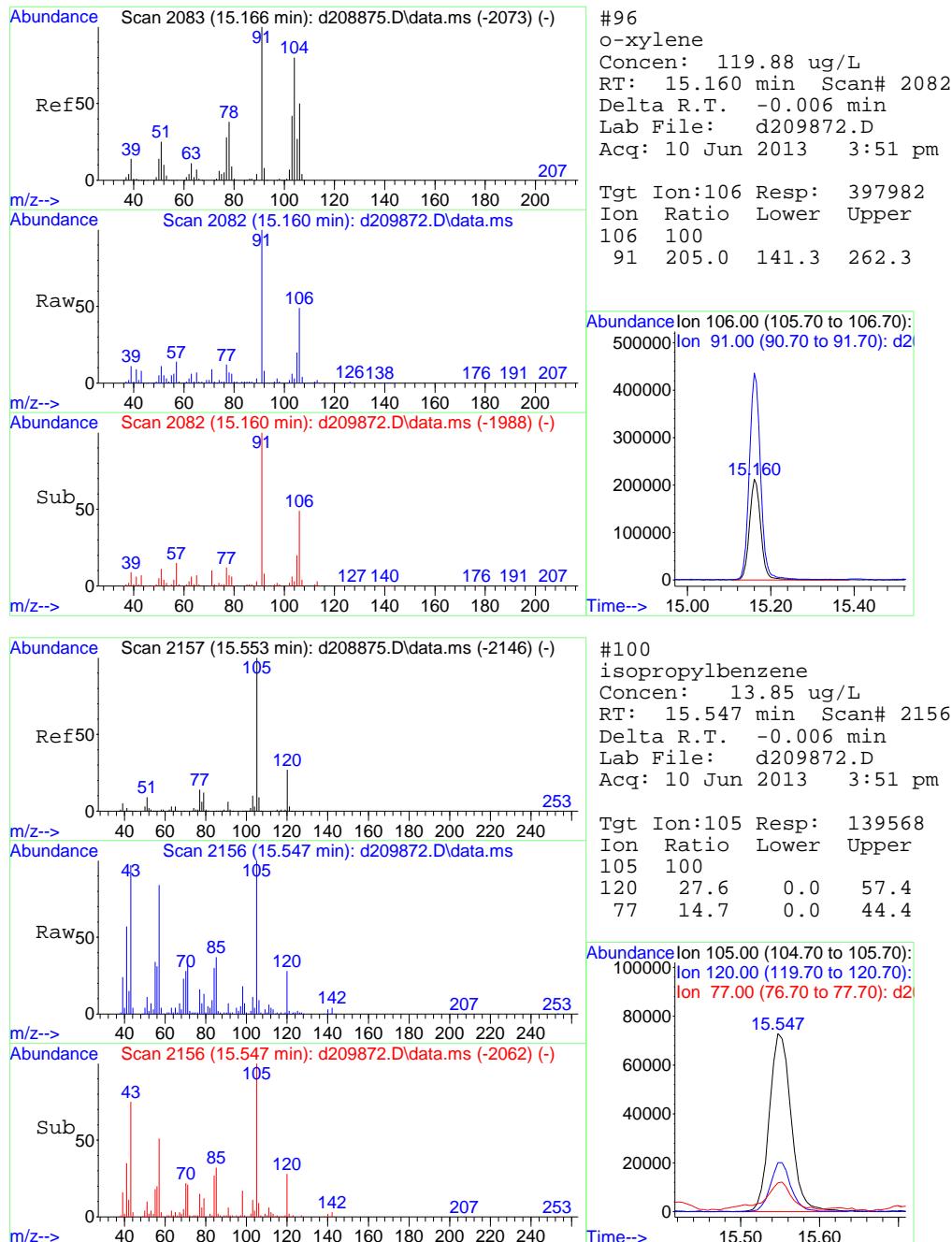
Data Path : C:\msdchem\1\DATA\  
 Data File : d209872.D  
 Acq On : 10 Jun 2013 3:51 pm  
 Operator : EmilyT  
 Sample : JB38251-4  
 Misc : ms49166, vd8566, 6.4,,100,10,1  
 ALS Vial : 14 Sample Multiplier: 1

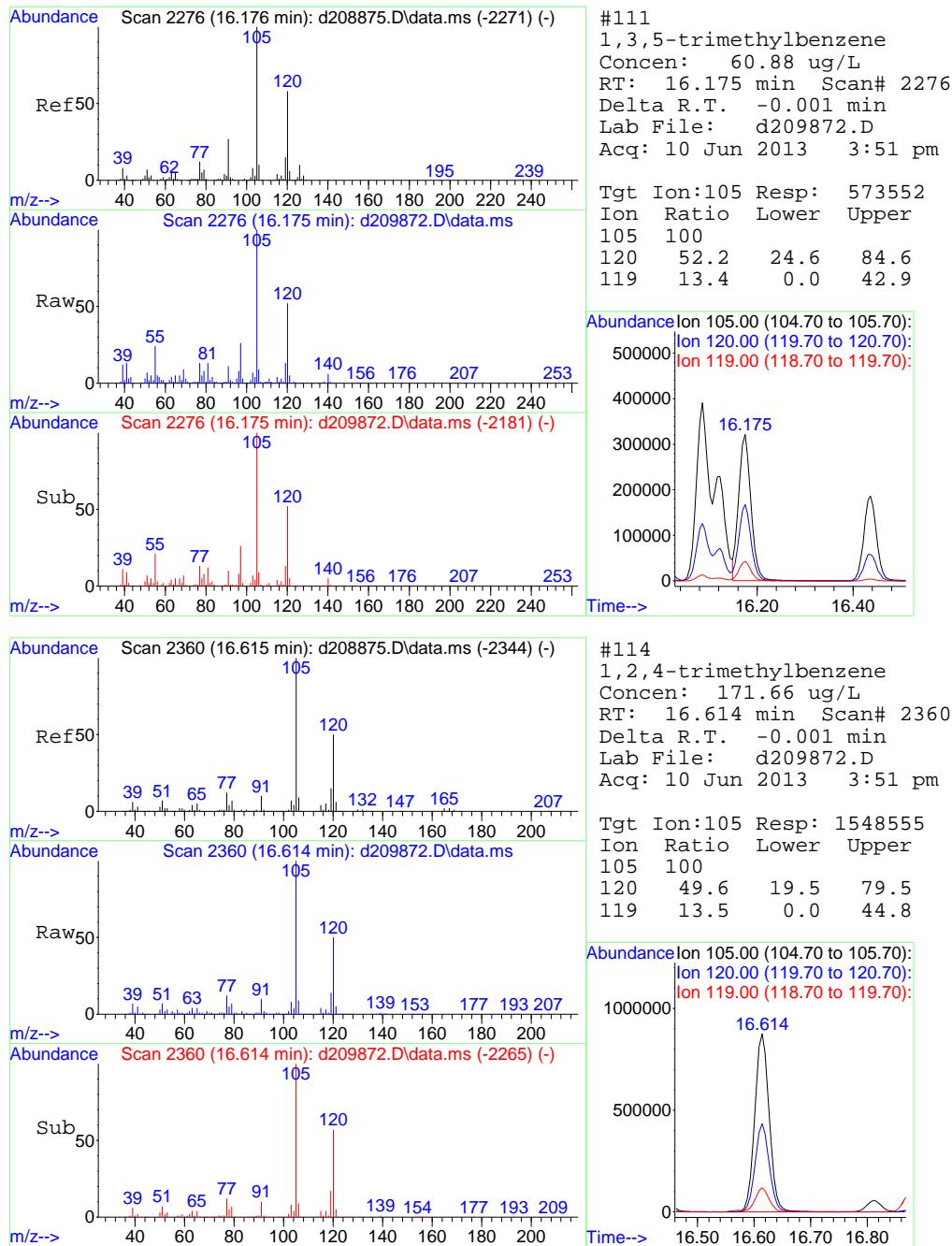
Quant Time: Jun 12 11:04:03 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Tue May 28 12:32:06 2013  
 Response via : Initial Calibration

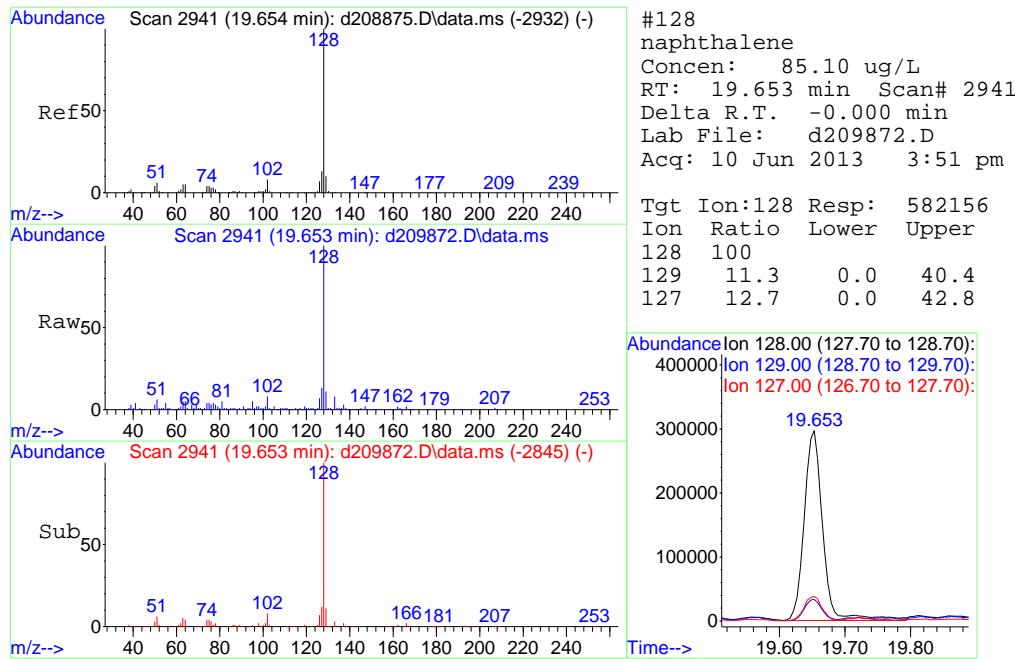












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\  
 Data File : d209922.D  
 Acq On : 11 Jun 2013 6:53 pm  
 Operator : EmilyT  
 Sample : jb38251-4cf  
 Misc : ms49166,vd8568,6.4,,5,10,1  
 ALS Vial : 13 Sample Multiplier: 1

Quant Time: Jun 12 10:38:10 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Tue May 28 12:32:06 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.994	65	108372	500.00	ug/L	0.00
4) pentafluorobenzene	10.222	168	223902	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.137	114	296662	50.00	ug/L	0.00
85) chlorobenzene-d5	14.474	117	269908	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.063	152	165023	50.00	ug/L	0.00

System Monitoring Compounds						
46) dibromofluoromethane (s)	10.253	113	85640	51.21	ug/L	0.00
Spiked Amount	50.000	Range	65 - 131	Recovery	= 102.42%	
47) 1,2-dichloroethane-d4 (s)	10.672	65	110868	53.40	ug/L	0.00
Spiked Amount	50.000	Range	70 - 121	Recovery	= 106.80%	
77) toluene-d8 (s)	12.842	98	338980	55.23	ug/L	0.00
Spiked Amount	50.000	Range	80 - 128	Recovery	= 110.46%	
101) 4-bromofluorobenzene (s)	15.761	95	128913	53.05	ug/L	0.00
Spiked Amount	50.000	Range	67 - 131	Recovery	= 106.10%	

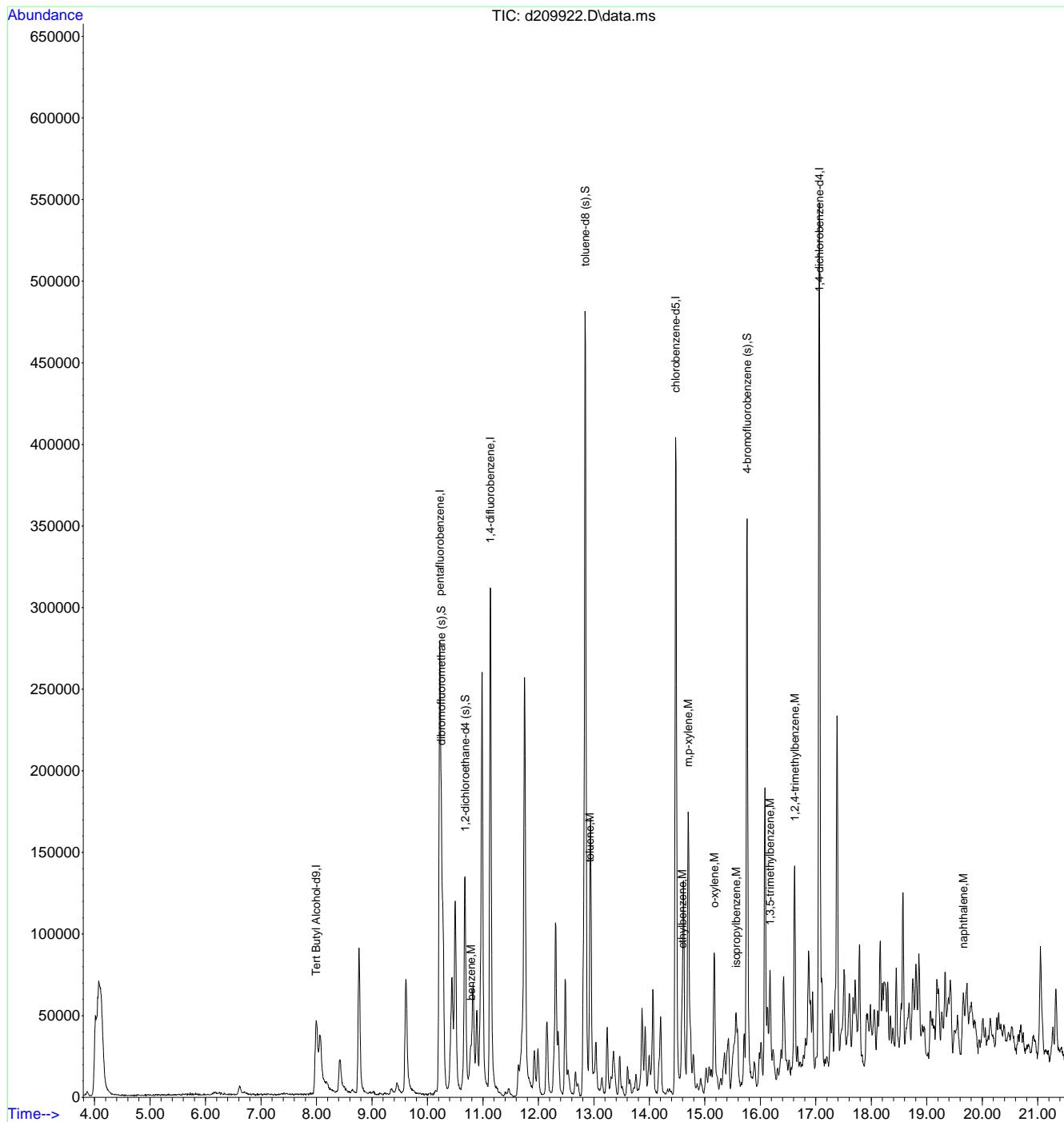
Target Compounds					Qvalue
62) benzene	10.787	78	24358	3.66	ug/L 96
79) toluene	12.921	92	14973	3.51	ug/L 99
94) ethylbenzene	14.584	91	42215	5.24	ug/L 94
95) m,p-xylene	14.699	106	65909	19.77	ug/L 97
96) o-xylene	15.170	106	20639	6.25	ug/L 95
100) isopropylbenzene	15.557	105	8410	0.96	ug/L 93
111) 1,3,5-trimethylbenzene	16.179	105	31571	3.83	ug/L 99
114) 1,2,4-trimethylbenzene	16.618	105	81875	10.38	ug/L 99
128) naphthalene	19.662	128	32655	6.79	ug/L 95

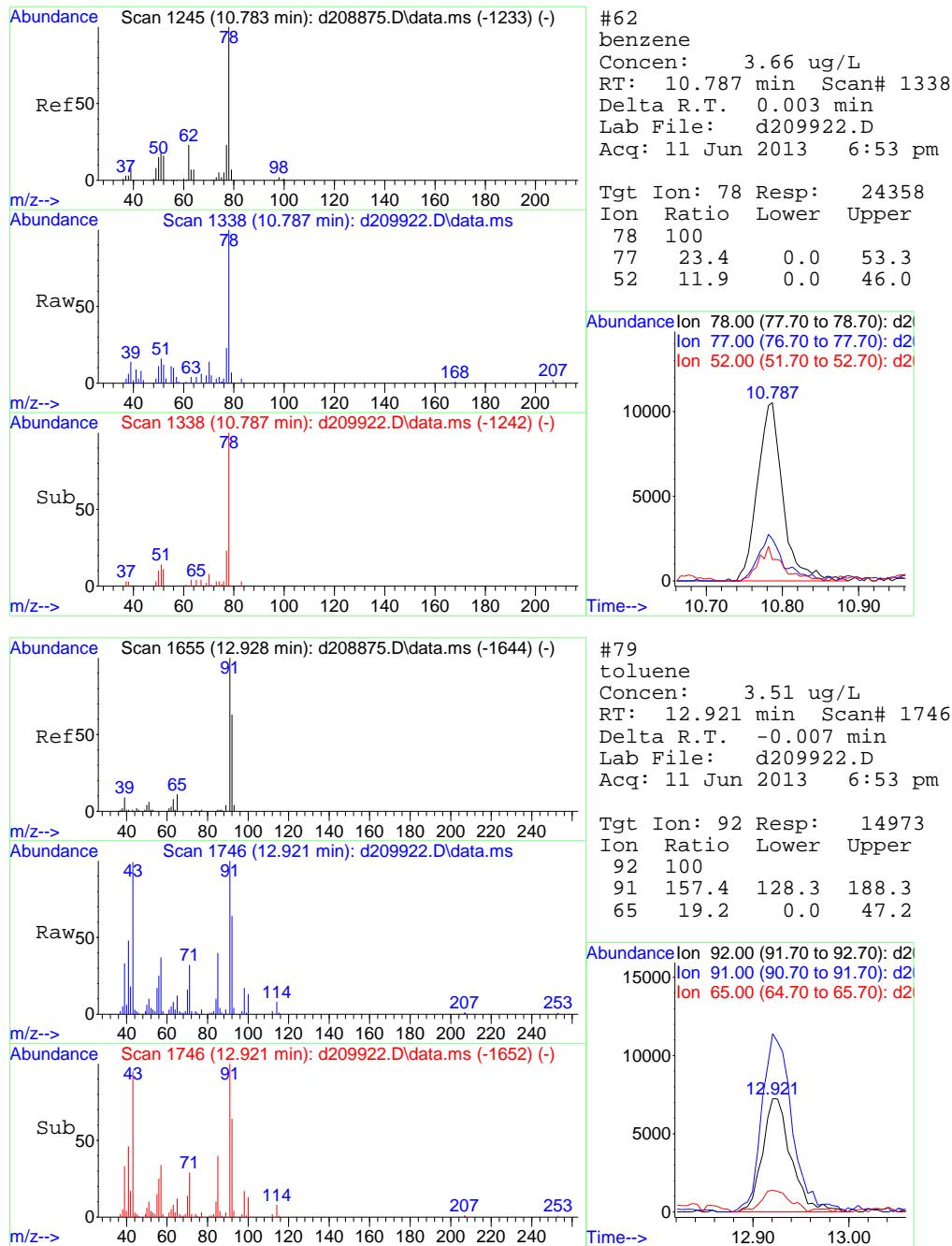
(#) = qualifier out of range (m) = manual integration (+) = signals summed

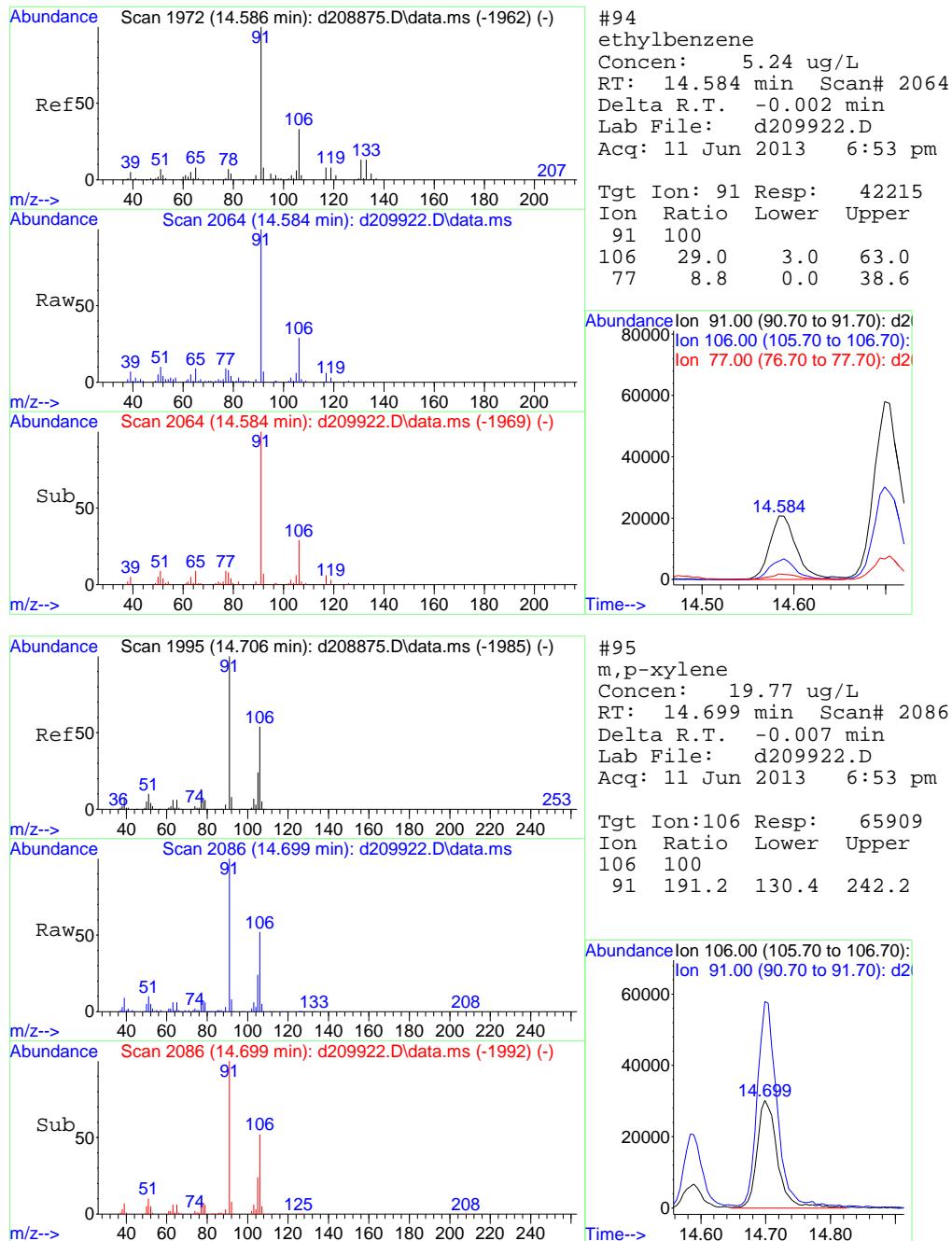
## Quantitation Report (QT Reviewed)

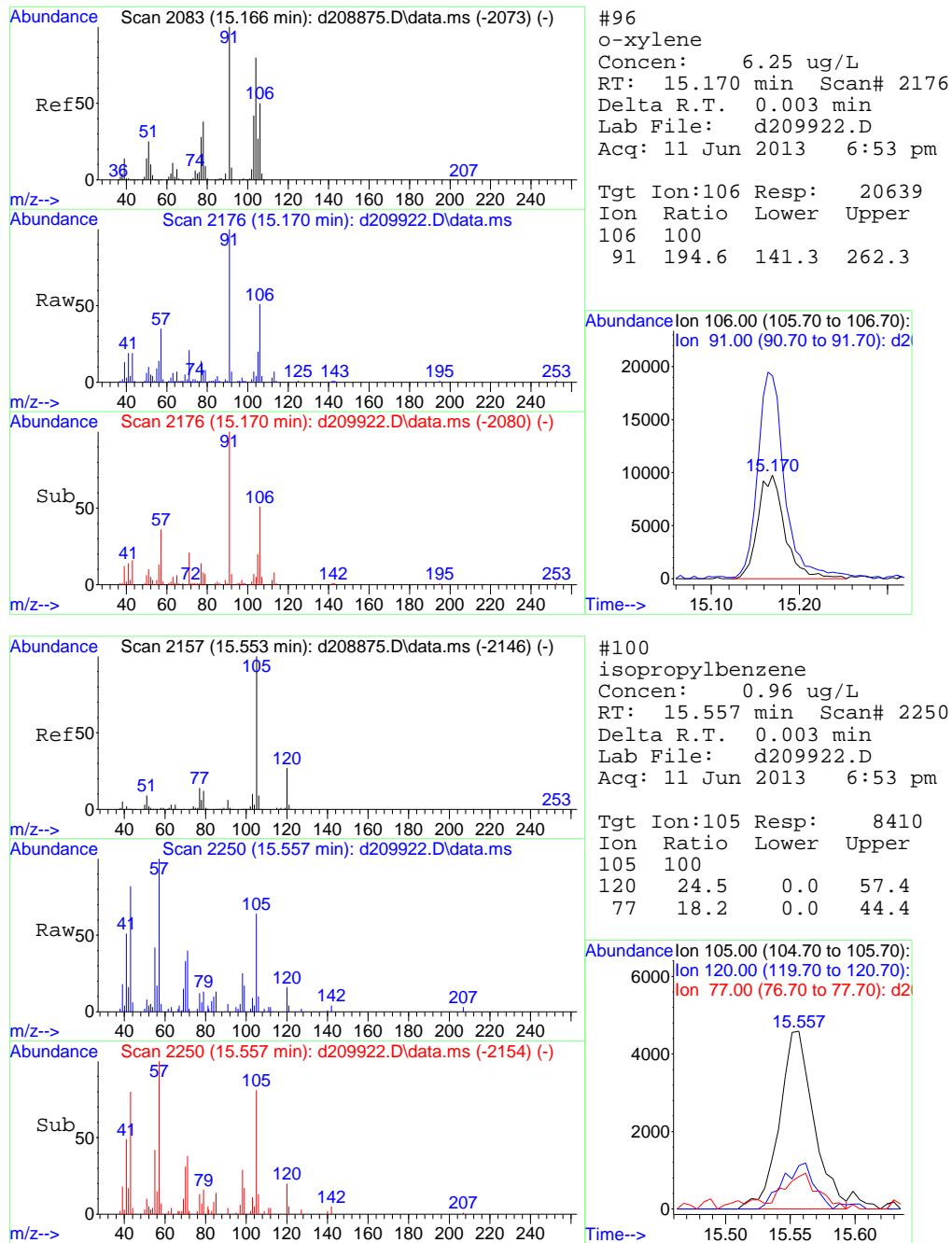
Data Path : C:\msdchem\1\DATA\  
 Data File : d209922.D  
 Acq On : 11 Jun 2013 6:53 pm  
 Operator : EmilyT  
 Sample : jb38251-4cf  
 Misc : ms49166, vd8568, 6.4,,5,10,1  
 ALS Vial : 13 Sample Multiplier: 1

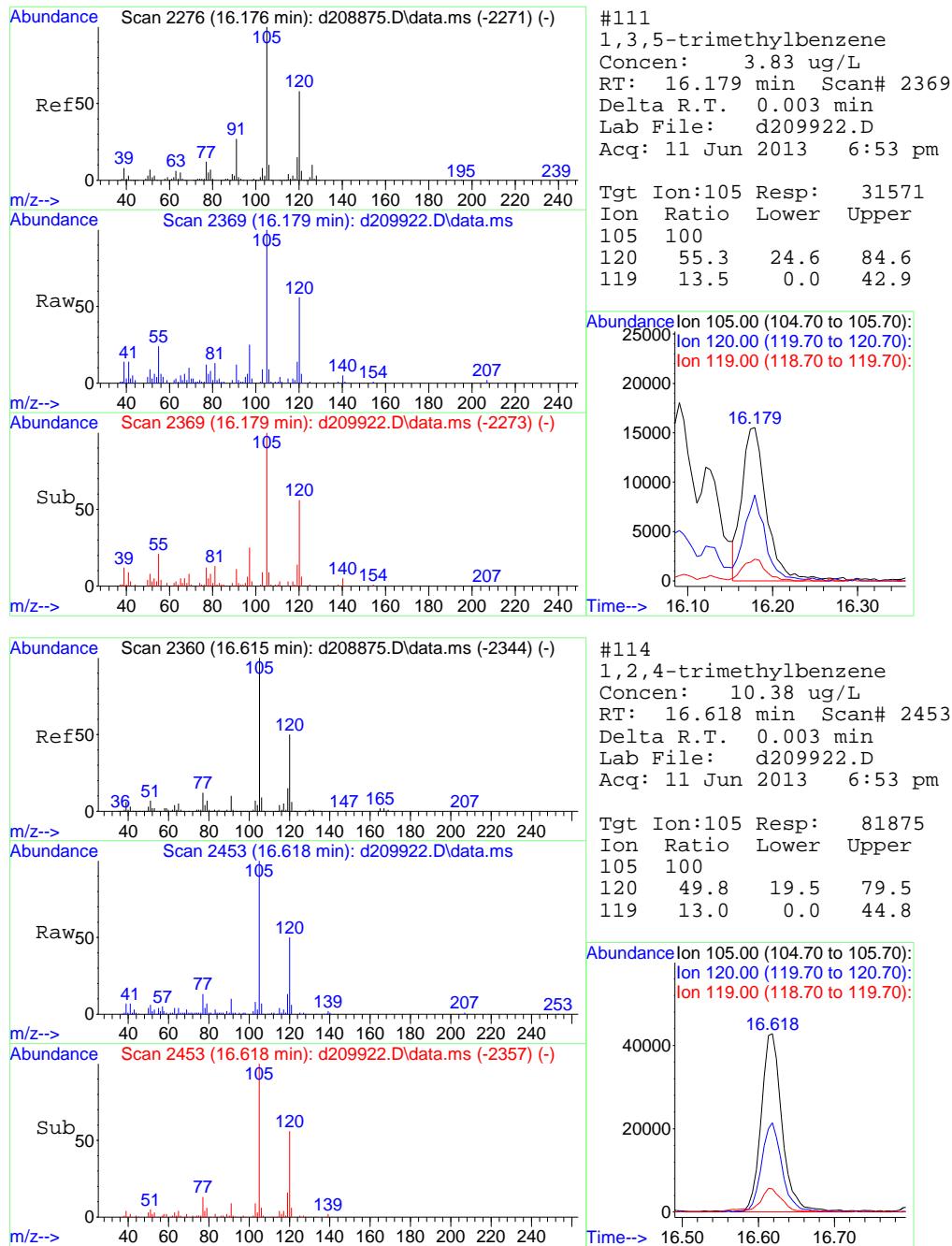
Quant Time: Jun 12 10:38:10 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Tue May 28 12:32:06 2013  
 Response via : Initial Calibration

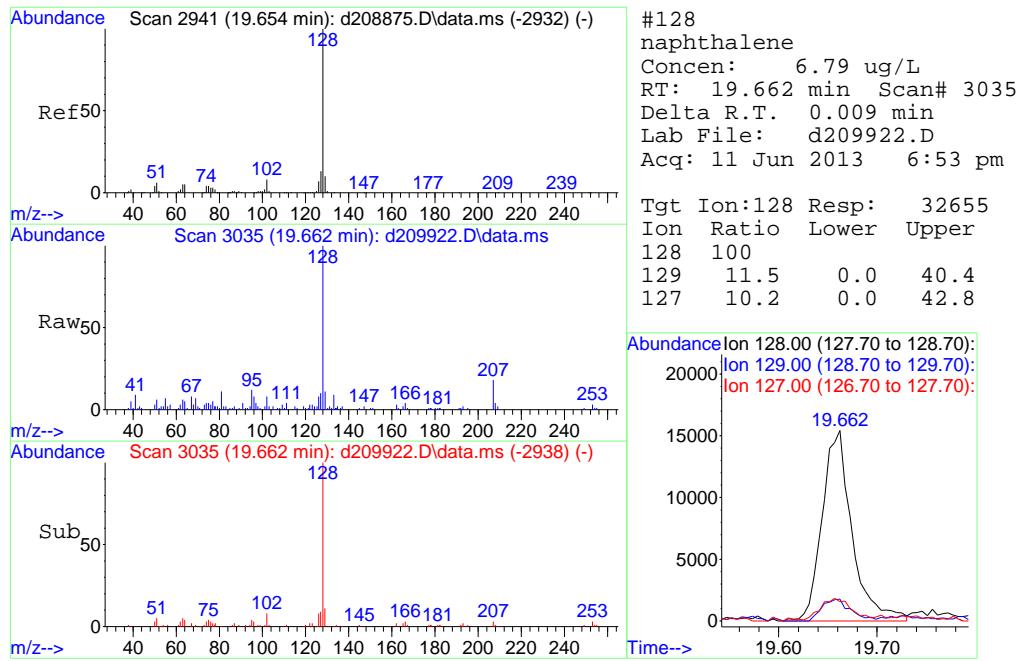












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\  
 Data File : d209716.D  
 Acq On : 5 Jun 2013 10:13 pm  
 Operator : EmilyT  
 Sample : mb  
 Misc : ms48988, vd8559, 5,,100,5,1  
 ALS Vial : 71 Sample Multiplier: 1

Quant Time: Jun 06 08:35:34 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Thu Jun 06 07:36:20 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.000	65	64999	500.00	ug/L	0.00
4) pentafluorobenzene	10.218	168	199377	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.133	114	261906	50.00	ug/L	0.00
85) chlorobenzene-d5	14.475	117	242814	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.064	152	151198	50.00	ug/L	0.00

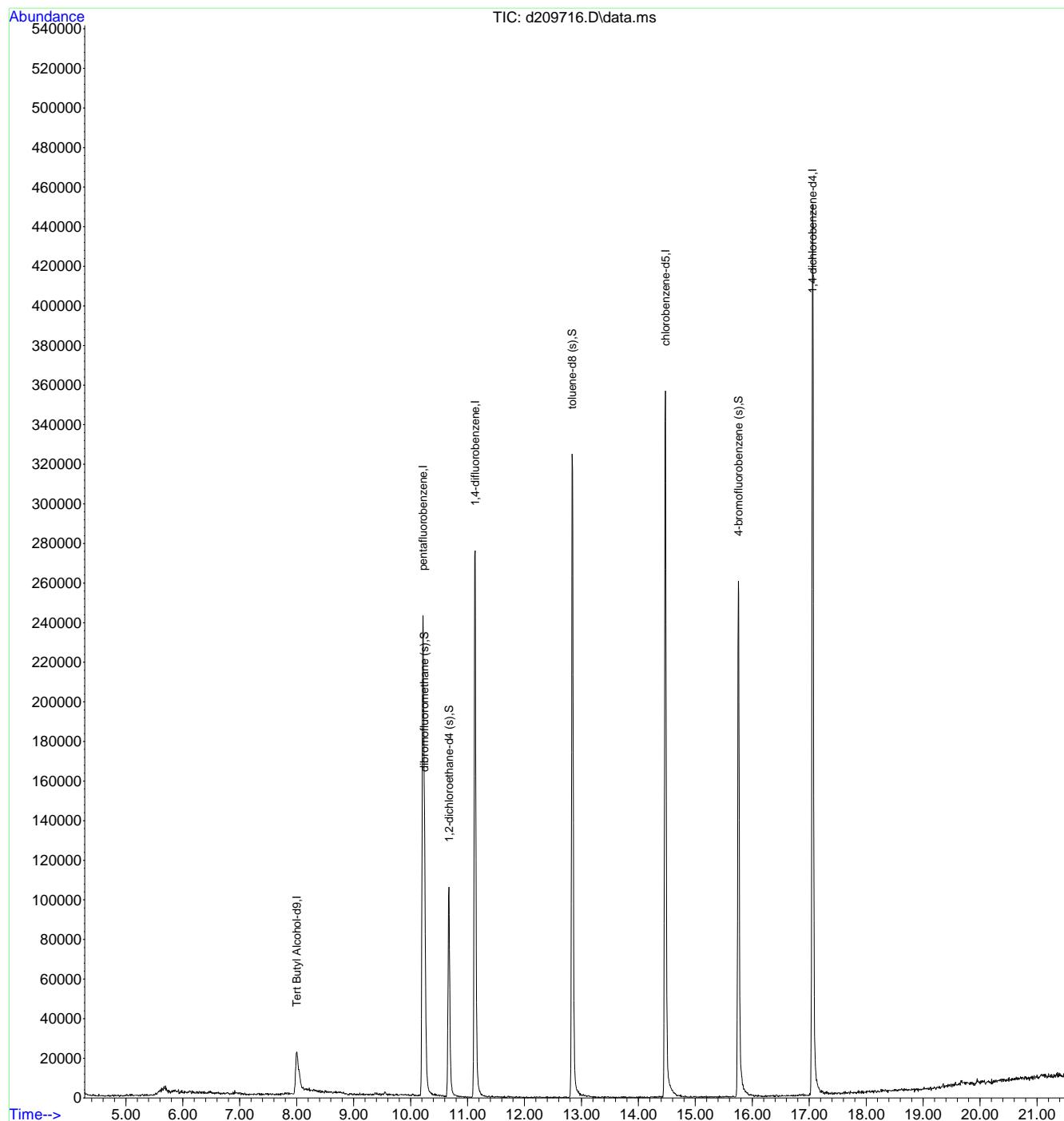
System Monitoring Compounds						
46) dibromofluoromethane (s)	10.249	113	66200	44.46	ug/L	0.00
Spiked Amount	50.000	Range	65 - 131	Recovery	=	88.92%
47) 1,2-dichloroethane-d4 (s)	10.673	65	86837	46.97	ug/L	0.00
Spiked Amount	50.000	Range	70 - 121	Recovery	=	93.94%
77) toluene-d8 (s)	12.838	98	252512	46.60	ug/L	-0.01
Spiked Amount	50.000	Range	80 - 128	Recovery	=	93.20%
101) 4-bromofluorobenzene (s)	15.762	95	99519	44.70	ug/L	0.00
Spiked Amount	50.000	Range	67 - 131	Recovery	=	89.40%

Target Compounds	Qvalue
(#)	= qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\  
 Data File : d209716.D  
 Acq On : 5 Jun 2013 10:13 pm  
 Operator : EmilyT  
 Sample : mb  
 Misc : ms48988, vd8559, 5,,100,5,1  
 ALS Vial : 71 Sample Multiplier: 1

Quant Time: Jun 06 08:35:34 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Thu Jun 06 07:36:20 2013  
 Response via : Initial Calibration



MD8524.M Thu Jun 06 08:36:11 2013

Page: 2

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\  
 Data File : d209863.D  
 Acq On : 10 Jun 2013 11:14 am  
 Operator : EmilyT  
 Sample : mb/JB25319F-10A  
 Misc : ms49337, vd8566, 5,,100,5,1  
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 11 11:55:25 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Tue May 28 12:32:06 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	8.011	65	88251	500.00	ug/L	0.02
4) pentafluorobenzene	10.218	168	188527	50.00	ug/L	0.00
53) 1,4-difluorobenzene	11.128	114	248722	50.00	ug/L	-0.01
85) chlorobenzene-d5	14.475	117	232351	50.00	ug/L	0.00
99) 1,4-dichlorobenzene-d4	17.059	152	142205	50.00	ug/L	0.00

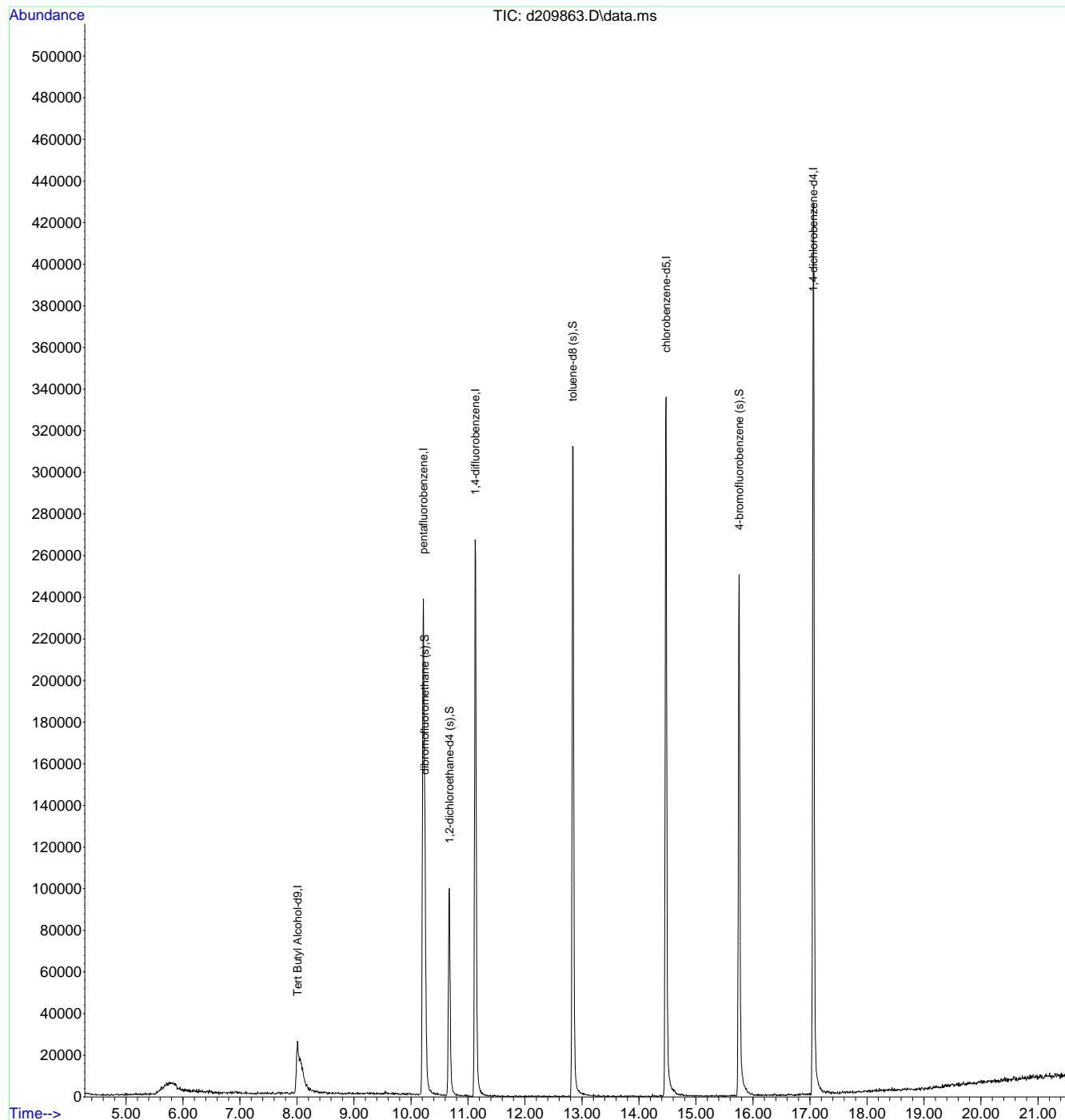
System Monitoring Compounds						
46) dibromofluoromethane (s)	10.249	113	63280	44.94	ug/L	0.00
Spiked Amount	50.000	Range 65 - 131	Recovery	=	89.88%	
47) 1,2-dichloroethane-d4 (s)	10.673	65	85148	48.71	ug/L	0.00
Spiked Amount	50.000	Range 70 - 121	Recovery	=	97.42%	
77) toluene-d8 (s)	12.843	98	240528	46.74	ug/L	0.00
Spiked Amount	50.000	Range 80 - 128	Recovery	=	93.48%	
101) 4-bromofluorobenzene (s)	15.756	95	96896	46.27	ug/L	0.00
Spiked Amount	50.000	Range 67 - 131	Recovery	=	92.54%	

Target Compounds	Qvalue
(#)	= qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\  
 Data File : d209863.D  
 Acq On : 10 Jun 2013 11:14 am  
 Operator : EmilyT  
 Sample : mb/JB25319F-10A  
 Misc : ms49337, vd8566,5,,100,5,1  
 ALS Vial : 5 Sample Multiplier: 1

Quant Time: Jun 11 11:55:25 2013  
 Quant Method : C:\msdchem\1\METHODS\MD8524.M  
 Quant Title : SW-846 Method 8260B  
 QLast Update : Tue May 28 12:32:06 2013  
 Response via : Initial Calibration



MD8524.M Tue Jun 11 11:56:00 2013

Page: 2

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7466\  
 Data File : I184808.D  
 Acq On : 1 Jun 2013 11:29 am  
 Operator : SCOTTM  
 Sample : mb  
 Misc : MS49239,VI7467,5.0,,,1  
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Jun 03 10:45:10 2013  
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M  
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Tue May 21 17:53:40 2013  
 Response via : Initial Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Tert Butyl Alcohol-d9	7.180	65	59031	50.00	ug/L	-0.02
5) pentafluorobenzene	9.440	168	204956	50.00	ug/L	-0.01
46) 1,4-difluorobenzene	10.355	114	287524	50.00	ug/L	-0.01
75) chlorobenzene-d5	13.525	117	223435	50.00	ug/L	-0.01
90) 1,4-dichlorobenzene-d4	15.884	152	107230	50.00	ug/L	-0.01

## System Monitoring Compounds

43) dibromofluoromethane (s)	9.477	113	73639	47.01	ug/L	0.00
Spiked Amount	50.000	Range	70 - 130	Recovery	=	94.02%
47) 1,2-dichloroethane-d4...	9.900	65	81450	54.44	ug/L	0.00
Spiked Amount	50.000	Range	70 - 122	Recovery	=	108.88%
76) toluene-d8 (s)	12.008	98	245326	49.26	ug/L	-0.01
Spiked Amount	50.000	Range	81 - 127	Recovery	=	98.52%
91) 4-bromofluorobenzene (s)	14.686	95	84362	54.78	ug/L	-0.01
Spiked Amount	50.000	Range	66 - 132	Recovery	=	109.56%

## Target Compounds

Qvalue

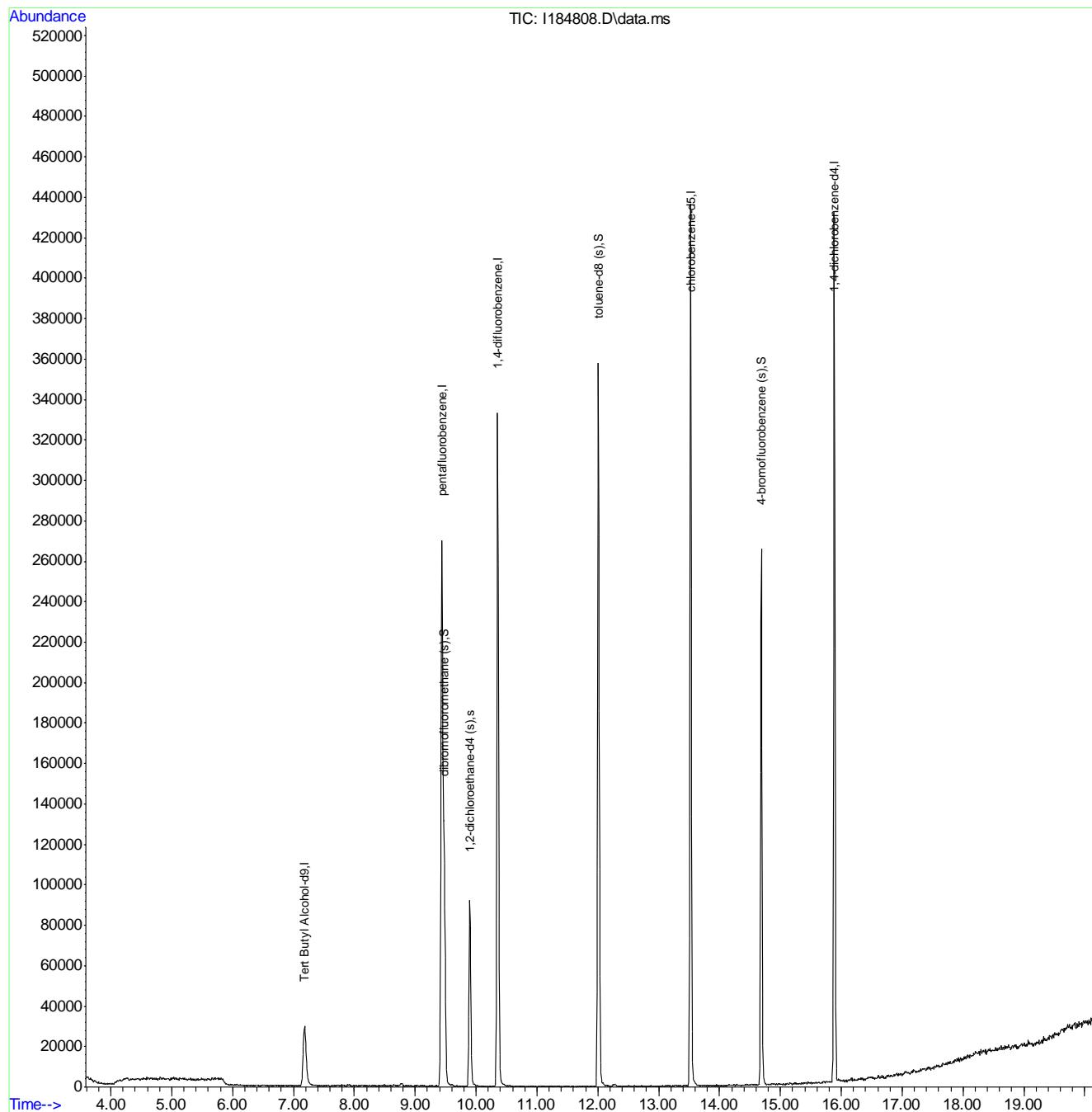
(#= qualifier out of range (m)= manual integration (+)= signals summed

7.2.3  
7

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\VI7466\  
 Data File : I184808.D  
 Acq On : 1 Jun 2013 11:29 am  
 Operator : SCOTTM  
 Sample : mb  
 Misc : MS49239,VI7467,5.0.,,,1  
 ALS Vial : 9 Sample Multiplier: 1

Quant Time: Jun 03 10:45:10 2013  
 Quant Method : C:\MSDCHEM\1\METHODS\MI7422.M  
 Quant Title : Method SW846 8260B, ZB624 60m x 0.25mm x 1.4um  
 QLast Update : Tue May 21 17:53:40 2013  
 Response via : Initial Calibration





## Misc. Forms

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### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



## **CHAIN OF CUSTODY**

PAGE OF

2235 Route 130, Dayton, NJ 08810  
TEL. 732-329-0200 FAX: 732-329-3499/3480  
[www.accutest.com](http://www.accutest.com)

**JB38251: Chain of Custody**

Page 1 of 2

## **Accutest Labs of New England, Inc.**



## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: JB38251

Client: ACNJ

Immediate Client Services Action Required: No

Date / Time Received: 5/31/2013

Delivery Method:

Client Service Action Required at Login: No

Project: SUB

No. Coolers: 1

Airbill #'s:

**Cooler Security****Y or N**

1. Custody Seals Present:   3. COC Present:    
2. Custody Seals Intact:   4. Smpl Dates/Time OK

**Cooler Temperature****Y or N**

1. Temp criteria achieved:    
2. Cooler temp verification:  Infared gun  
3. Cooler media:  Ice (bag)

**Quality Control Preservation****Y or N****N/A**

1. Trip Blank present / cooler:     
2. Trip Blank listed on COC:     
3. Samples preserved properly:    
4. VOCs headspace free:

**Sample Integrity - Documentation****Y or N**

1. Sample labels present on bottles:    
2. Container labeling complete:    
3. Sample container label / COC agree:

**Sample Integrity - Condition****Y or N**

1. Sample recvd within HT:    
2. All containers accounted for:    
3. Condition of sample:  Intact

**Sample Integrity - Instructions****Y or N****N/A**

1. Analysis requested is clear:    
2. Bottles received for unspecified tests:    
3. Sufficient volume recvd for analysis:    
4. Compositing instructions clear:     
5. Filtering instructions clear:

Comments

Accutest Laboratories  
V:508.481.6200495 Technology Center West, Bldg One  
F: 508.481.7753Marlborough, MA  
www.accutest.com

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**JB38251: Chain of Custody****Page 2 of 2**

## Internal Sample Tracking Chronicle

Accutest New Jersey

Job No: JB38251

AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA  
Project No: AOI-5

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JB38251-1	Collected: 29-MAY-13 11:00 By: LM	Received: 29-MAY-13 By:				
	AOI-5_MW-438_8-10'_52913					
JB38251-1	SM21 2540 B MOD.	02-JUN-13	HS			%SOL
JB38251-1	SW846 6010C	05-JUN-13 00:23	EAL	04-JUN-13 DA		PB
JB38251-1	SW846 8011	09-JUN-13 01:26	CZ	07-JUN-13 BJ		V8011EDB
JB38251-1	SW846 8270C	12-JUN-13 04:05	KR	06-JUN-13 PA		B8270SL
JB38251-2	Collected: 29-MAY-13 12:00 By: LM	Received: 29-MAY-13 By:				
	AOI-5_MW-434_0-2'_52913					
JB38251-2	SM21 2540 B MOD.	02-JUN-13	HS			%SOL
JB38251-2	SW846 6010C	05-JUN-13 00:28	EAL	04-JUN-13 DA		PB
JB38251-2	SW846 8011	09-JUN-13 01:57	CZ	07-JUN-13 BJ		V8011EDB
JB38251-2	SW846 8270C	12-JUN-13 04:30	KR	06-JUN-13 PA		B8270SL
JB38251-3	Collected: 29-MAY-13 14:00 By: LM	Received: 29-MAY-13 By:				
	AOI-5_MW-442_0-2'_052913					
JB38251-3	SM21 2540 B MOD.	02-JUN-13	HS			%SOL
JB38251-3	SW846 6010C	05-JUN-13 00:32	EAL	04-JUN-13 DA		PB
JB38251-3	SW846 8011	09-JUN-13 02:29	CZ	07-JUN-13 BJ		V8011EDB
JB38251-3	SW846 8270C	12-JUN-13 04:55	KR	06-JUN-13 PA		B8270SL
JB38251-4	Collected: 29-MAY-13 14:20 By: LM	Received: 29-MAY-13 By:				
	AOI-5_MW-442_6-8'_052913					
JB38251-4	SM21 2540 B MOD.	02-JUN-13	HS			%SOL
JB38251-4	SW846 6010C	05-JUN-13 00:36	EAL	04-JUN-13 DA		PB
JB38251-4	SW846 8011	09-JUN-13 03:01	CZ	07-JUN-13 BJ		V8011EDB
JB38251-4	SW846 8270C	12-JUN-13 05:20	KR	06-JUN-13 PA		B8270SL

## Accutest Internal Chain of Custody

Page 1 of 1

Job Number: JB38251  
Account: ALNJ Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA  
Received: 05/29/13

Sample.Bottle Number	Transfer FROM	Transfer TO	Date/Time	Reason
JB38251-1.1	Walk In Ref #5	Mehdi Abdolrahim	06/02/13 08:52	Retrieve from Storage
JB38251-1.1	Mehdi Abdolrahim	Walk In Ref #5	06/02/13 10:25	Return to Storage
JB38251-1.1	Walk In Ref #5	Dorina Antonovici	06/04/13 12:48	Retrieve from Storage
JB38251-1.1	Dorina Antonovici	Walk In Ref #5	06/04/13 15:18	Return to Storage
JB38251-1.1	Walk In Ref #5	Bijan Jafari	06/06/13 10:45	Retrieve from Storage
JB38251-1.1	Bijan Jafari	Walk In Ref #5	06/07/13 09:05	Return to Storage
JB38251-2.1	Walk In Ref #5	Mehdi Abdolrahim	06/02/13 08:52	Retrieve from Storage
JB38251-2.1	Mehdi Abdolrahim	Walk In Ref #5	06/02/13 10:25	Return to Storage
JB38251-2.1	Walk In Ref #5	Dorina Antonovici	06/04/13 12:48	Retrieve from Storage
JB38251-2.1	Dorina Antonovici	Walk In Ref #5	06/04/13 15:18	Return to Storage
JB38251-2.1	Walk In Ref #5	Bijan Jafari	06/06/13 10:45	Retrieve from Storage
JB38251-2.1	Bijan Jafari	Walk In Ref #5	06/07/13 09:05	Return to Storage
JB38251-3.1	Walk In Ref #5	Mehdi Abdolrahim	06/02/13 08:52	Retrieve from Storage
JB38251-3.1	Mehdi Abdolrahim	Walk In Ref #5	06/02/13 10:25	Return to Storage
JB38251-3.1	Walk In Ref #5	Dorina Antonovici	06/04/13 12:48	Retrieve from Storage
JB38251-3.1	Dorina Antonovici	Walk In Ref #5	06/04/13 15:18	Return to Storage
JB38251-3.1	Walk In Ref #5	Bijan Jafari	06/06/13 10:45	Retrieve from Storage
JB38251-3.1	Bijan Jafari	Walk In Ref #5	06/07/13 09:05	Return to Storage
JB38251-4.1	Walk In Ref #5	Mehdi Abdolrahim	06/02/13 08:52	Retrieve from Storage
JB38251-4.1	Mehdi Abdolrahim	Walk In Ref #5	06/02/13 10:25	Return to Storage
JB38251-4.1	Walk In Ref #5	Dorina Antonovici	06/04/13 12:48	Retrieve from Storage
JB38251-4.1	Dorina Antonovici	Walk In Ref #5	06/04/13 15:18	Return to Storage
JB38251-4.1	Walk In Ref #5	Bijan Jafari	06/06/13 10:45	Retrieve from Storage
JB38251-4.1	Bijan Jafari	Walk In Ref #5	06/07/13 09:05	Return to Storage



## GC/MS Semi-volatiles

### QC Data Summaries

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Instrument Performance Checks (DFTPP)
- Internal Standard Area Summaries
- Surrogate Recovery Summaries
- Initial and Continuing Calibration Summaries

**Method Blank Summary**

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33500-MB	W13001.D	1	06/11/13	KR	06/06/13	OP33500	MSW598

The QC reported here applies to the following samples:

Method: SW846 8270C

JB38251-1, JB38251-2, JB38251-3, JB38251-4

CAS No.	Compound	Result	RL	MDL	Units	Q
120-12-7	Anthracene	ND	98	12	ug/kg	
56-55-3	Benzo(a)anthracene	ND	98	13	ug/kg	
50-32-8	Benzo(a)pyrene	ND	98	11	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	98	12	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	98	9.8	ug/kg	
218-01-9	Chrysene	ND	98	12	ug/kg	
86-73-7	Fluorene	ND	98	13	ug/kg	
91-20-3	Naphthalene	ND	98	16	ug/kg	
85-01-8	Phenanthrene	ND	98	13	ug/kg	
129-00-0	Pyrene	ND	98	12	ug/kg	

**CAS No. Surrogate Recoveries Limits**

367-12-4	2-Fluorophenol	62%	30-130%
4165-62-2	Phenol-d5	60%	30-130%
118-79-6	2,4,6-Tribromophenol	67%	30-130%
4165-60-0	Nitrobenzene-d5	60%	30-130%
321-60-8	2-Fluorobiphenyl	66%	30-130%
1718-51-0	Terphenyl-d14	73%	30-130%

**CAS No. Tentatively Identified Compounds R.T. Est. Conc. Units Q**

Total TIC, Semi-Volatile 0 ug/kg

# Blank Spike/Blank Spike Duplicate Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33500-BS	W13002.D	1	06/11/13	KR	06/06/13	OP33500	MSW598
OP33500-BSD	W13003.D	1	06/11/13	KR	06/06/13	OP33500	MSW598

The QC reported here applies to the following samples:

Method: SW846 8270C

JB38251-1, JB38251-2, JB38251-3, JB38251-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
120-12-7	Anthracene	2420	1620	67	1770	72	9	40-140/30
56-55-3	Benzo(a)anthracene	2420	1840	76	2080	84	12	40-140/30
50-32-8	Benzo(a)pyrene	2420	1610	66	1850	75	14	40-140/30
205-99-2	Benzo(b)fluoranthene	2420	1880	78	2110	86	12	40-140/30
191-24-2	Benzo(g,h,i)perylene	2420	1810	75	2070	84	13	40-140/30
218-01-9	Chrysene	2420	1740	72	1980	80	13	40-140/30
86-73-7	Fluorene	2420	1630	67	1700	69	4	40-140/30
91-20-3	Naphthalene	2420	2040	84	2100	85	3	40-140/30
85-01-8	Phenanthrene	2420	1720	71	1880	76	9	40-140/30
129-00-0	Pyrene	2420	1740	72	1950	79	11	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	57%	57%	30-130%
4165-62-2	Phenol-d5	56%	55%	30-130%
118-79-6	2,4,6-Tribromophenol	66%	70%	30-130%
4165-60-0	Nitrobenzene-d5	56%	57%	30-130%
321-60-8	2-Fluorobiphenyl	62%	61%	30-130%
1718-51-0	Terphenyl-d14	67%	73%	30-130%

\* = Outside of Control Limits.

9.2.1

9

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33500-MS	W13004.D	1	06/11/13	KR	06/06/13	OP33500	MSW598
OP33500-MSD	W13005.D	1	06/11/13	KR	06/06/13	OP33500	MSW598
JB38374-1	W13006.D	1	06/11/13	KR	06/06/13	OP33500	MSW598

The QC reported here applies to the following samples:

Method: SW846 8270C

JB38251-1, JB38251-2, JB38251-3, JB38251-4

CAS No.	Compound	JB38374-1		Spike	MS	MS	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	%		
120-12-7	Anthracene	611		2700	2590	73	2510	72	3	40-140/30
56-55-3	Benzo(a)anthracene	129		2700	2490	87	2390	85	4	40-140/30
50-32-8	Benzo(a)pyrene	47.4	J	2700	2090	76	2030	75	3	40-140/30
205-99-2	Benzo(b)fluoranthene	ND		2700	2460	91	2090	79	16	40-140/30
191-24-2	Benzo(g,h,i)perylene	60.1	J	2700	2420	87	2330	86	4	40-140/30
218-01-9	Chrysene	141		2700	2390	83	2220	78	7	40-140/30
86-73-7	Fluorene	3070		2700	4550	55	4470	53	2	40-140/30
91-20-3	Naphthalene	ND		2700	2780	103	2780	105	0	40-140/30
85-01-8	Phenanthrene	4900		2700	5940	39* a	5840	35* a	2	40-140/30
129-00-0	Pyrene	722		2700	2860	79	2700	75	6	40-140/30

CAS No.	Surrogate Recoveries	MS	MSD	JB38374-1	Limits
367-12-4	2-Fluorophenol	61%	60%		30-130%
4165-62-2	Phenol-d5	60%	60%		30-130%
118-79-6	2,4,6-Tribromophenol	80%	79%		30-130%
4165-60-0	Nitrobenzene-d5	64%	63%	64%	30-130%
321-60-8	2-Fluorobiphenyl	67%	67%	68%	30-130%
1718-51-0	Terphenyl-d14	79%	76%	81%	30-130%

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

\* = Outside of Control Limits.

9.3.1

6

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW580-DFTPP	Injection Date:	05/30/13
Lab File ID:	W12578.D	Injection Time:	07:20
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	17592	44.7	Pass
68	Less than 2.0% of mass 69	327	0.83	(1.75) <sup>a</sup> Pass
69	Mass 69 relative abundance	18712	47.6	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	21376	54.4	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	39328	100.0	Pass
199	5.0 - 9.0% of mass 198	2823	7.18	Pass
275	10.0 - 30.0% of mass 198	10085	25.6	Pass
365	1.0 - 100.0% of mass 198	1062	2.70	Pass
441	Present, but less than mass 443	2939	7.47	(71.7) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	19792	50.3	Pass
443	17.0 - 23.0% of mass 442	4099	10.4	(20.7) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSW579-IC579	W12580.D	05/30/13	09:02	01:42	Initial cal 2
MSW579-IC579	W12581.D	05/30/13	09:25	02:05	Initial cal 5
MSW579-IC579	W12582.D	05/30/13	10:16	02:56	Initial cal 10
MSW579-IC579	W12583.D	05/30/13	10:40	03:20	Initial cal 20
MSW579-ICC579	W12584.D	05/30/13	11:03	03:43	Initial cal 50
MSW579-IC579	W12585.D	05/30/13	11:26	04:06	Initial cal 80
MSW579-IC579	W12586.D	05/30/13	11:49	04:29	Initial cal 120
MSW579-IC579	W12587.D	05/30/13	12:12	04:52	Initial cal 160
MSW579-ICV579	W12588.D	05/30/13	12:36	05:16	Initial cal verification 50
MSW579-ICV579	W12589.D	05/30/13	12:59	05:39	Initial cal verification 20
MSW579-ICV579	W12590.D	05/30/13	13:22	06:02	Initial cal verification 20
MSW580-ICC580	W12593.D	05/30/13	15:22	08:02	Initial cal 50
MSW580-IC580	W12594.D	05/30/13	15:45	08:25	Initial cal 5
MSW580-IC580	W12595.D	05/30/13	16:08	08:48	Initial cal 10
MSW580-IC580	W12596.D	05/30/13	16:31	09:11	Initial cal 20
MSW580-IC580	W12597.D	05/30/13	16:54	09:34	Initial cal 40
MSW580-IC580	W12598.D	05/30/13	17:18	09:58	Initial cal 80
MSW580-IC580	W12599.D	05/30/13	17:41	10:21	Initial cal 100

# Instrument Performance Check (DFTPP)

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW598-DFTPP	Injection Date:	06/11/13
Lab File ID:	W12998.D	Injection Time:	07:33
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	6716	31.4	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
69	Mass 69 relative abundance	7830	36.6	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	9649	45.1	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	21409	100.0	Pass
199	5.0 - 9.0% of mass 198	1307	6.10	Pass
275	10.0 - 30.0% of mass 198	6178	28.9	Pass
365	1.0 - 100.0% of mass 198	408	1.91	Pass
441	Present, but less than mass 443	2217	10.4	(70.2) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	15771	73.7	Pass
443	17.0 - 23.0% of mass 442	3159	14.8	(20.0) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSW598-CC579	W12999.D	06/11/13	07:57	00:24	Continuing cal 50
MSW598-CC579	W13000.D	06/11/13	08:22	00:49	Continuing cal 50
OP33500-MB	W13001.D	06/11/13	08:46	01:13	Method Blank
OP33500-BS	W13002.D	06/11/13	09:11	01:38	Blank Spike
OP33500-BSD	W13003.D	06/11/13	09:35	02:02	Blank Spike Duplicate
OP33500-MS	W13004.D	06/11/13	09:59	02:26	Matrix Spike
OP33500-MSD	W13005.D	06/11/13	10:24	02:51	Matrix Spike Duplicate
JB38374-1	W13006.D	06/11/13	10:48	03:15	(used for QC only; not part of job JB38251)
ZZZZZZ	W13007.D	06/11/13	11:13	03:40	(unrelated sample)
ZZZZZZ	W13008.D	06/11/13	11:37	04:04	(unrelated sample)
ZZZZZZ	W13009.D	06/11/13	12:02	04:29	(unrelated sample)
ZZZZZZ	W13010.D	06/11/13	12:26	04:53	(unrelated sample)
ZZZZZZ	W13011.D	06/11/13	12:51	05:18	(unrelated sample)
ZZZZZZ	W13012.D	06/11/13	13:16	05:43	(unrelated sample)
ZZZZZZ	W13013.D	06/11/13	13:41	06:08	(unrelated sample)
ZZZZZZ	W13014.D	06/11/13	14:05	06:32	(unrelated sample)
ZZZZZZ	W13015.D	06/11/13	14:29	06:56	(unrelated sample)
ZZZZZZ	W13016.D	06/11/13	14:53	07:20	(unrelated sample)
ZZZZZZ	W13017.D	06/11/13	15:17	07:44	(unrelated sample)

# Instrument Performance Check (DFTPP)

Page 1 of 2

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW599-DFTPP	Injection Date:	06/11/13
Lab File ID:	W13019.D	Injection Time:	17:58
Instrument ID:	GCMSW		

m/e	Ion Abundance Criteria	Raw Abundance	% Relative Abundance	Pass/Fail
51	30.0 - 60.0% of mass 198	4775	32.8	Pass
68	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
69	Mass 69 relative abundance	5553	38.1	Pass
70	Less than 2.0% of mass 69	0	0.00	(0.00) <sup>a</sup> Pass
127	40.0 - 60.0% of mass 198	6992	48.0	Pass
197	Less than 1.0% of mass 198	0	0.00	Pass
198	Base peak, 100% relative abundance	14576	100.0	Pass
199	5.0 - 9.0% of mass 198	1141	7.83	Pass
275	10.0 - 30.0% of mass 198	4062	27.9	Pass
365	1.0 - 100.0% of mass 198	297	2.04	Pass
441	Present, but less than mass 443	1538	10.6	(77.5) <sup>b</sup> Pass
442	40.0 - 100.0% of mass 198	9974	68.4	Pass
443	17.0 - 23.0% of mass 442	1985	13.6	(19.9) <sup>c</sup> Pass

(a) Value is % of mass 69

(b) Value is % of mass 443

(c) Value is % of mass 442

This check applies to the following Samples, MS, MSD, Blanks, and Standards:

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
MSW599-CC579	W13021.D	06/11/13	18:41	00:43	Continuing cal 50
OP33502-MB	W13022.D	06/11/13	19:05	01:07	Method Blank
OP33502-BS	W13023.D	06/11/13	19:30	01:32	Blank Spike
OP33502-BSD	W13024.D	06/11/13	19:54	01:56	Blank Spike Duplicate
OP33502-MS	W13025.D	06/11/13	20:18	02:20	Matrix Spike
OP33502-MSD	W13026.D	06/11/13	20:42	02:44	Matrix Spike Duplicate
MC21362-12	W13027.D	06/11/13	21:07	03:09	(used for QC only; not part of job JB38251)
ZZZZZZ	W13028.D	06/11/13	21:31	03:33	(unrelated sample)
ZZZZZZ	W13029.D	06/11/13	21:55	03:57	(unrelated sample)
ZZZZZZ	W13030.D	06/11/13	22:20	04:22	(unrelated sample)
ZZZZZZ	W13031.D	06/11/13	22:45	04:47	(unrelated sample)
ZZZZZZ	W13032.D	06/11/13	23:10	05:12	(unrelated sample)
ZZZZZZ	W13033.D	06/11/13	23:34	05:36	(unrelated sample)
ZZZZZZ	W13034.D	06/11/13	23:58	06:00	(unrelated sample)
ZZZZZZ	W13035.D	06/12/13	00:23	06:25	(unrelated sample)
ZZZZZZ	W13036.D	06/12/13	00:48	06:50	(unrelated sample)
ZZZZZZ	W13037.D	06/12/13	01:12	07:14	(unrelated sample)
ZZZZZZ	W13038.D	06/12/13	01:37	07:39	(unrelated sample)
ZZZZZZ	W13039.D	06/12/13	02:02	08:04	(unrelated sample)

# Instrument Performance Check (DFTPP)

Page 2 of 2

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample:	MSW599-DFTPP	Injection Date:	06/11/13
Lab File ID:	W13019.D	Injection Time:	17:58
Instrument ID:	GCMSW		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	W13040.D	06/12/13	02:26	08:28	(unrelated sample)
ZZZZZZ	W13041.D	06/12/13	02:51	08:53	(unrelated sample)
ZZZZZZ	W13042.D	06/12/13	03:16	09:18	(unrelated sample)
ZZZZZZ	W13043.D	06/12/13	03:41	09:43	(unrelated sample)
JB38251-1	W13044.D	06/12/13	04:05	10:07	AOI-5_MW-438_8-10'_52913
JB38251-2	W13045.D	06/12/13	04:30	10:32	AOI-5_MW-434_0-2'_52913
JB38251-3	W13046.D	06/12/13	04:55	10:57	AOI-5_MW-442_0-2'_052913
JB38251-4	W13047.D	06/12/13	05:20	11:22	AOI-5_MW-442_6-8'_052913
ZZZZZZ	W13048.D	06/12/13	05:44	11:46	(unrelated sample)

9.4.3  
9

# Semivolatile Internal Standard Area Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSW598-CC579	Injection Date:	06/11/13
Lab File ID:	W12999.D	Injection Time:	07:57
Instrument ID:	GCMSW	Method:	SW846 8270C

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	52554	4.17	190173	5.23	129597	6.76	245928	8.17	316813	11.15	314076	12.74
Upper Limit <sup>a</sup>	105108	4.67	380346	5.73	259194	7.26	491856	8.67	633626	11.65	628152	13.24
Lower Limit <sup>b</sup>	26277	3.67	95087	4.73	64799	6.26	122964	7.67	158407	10.65	157038	12.24

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
OP33500-MB	53742	4.17	193795	5.23	128339	6.76	238783	8.16	301136	11.14	304524	12.73
OP33500-BS	53125	4.17	187432	5.23	124803	6.76	232860	8.16	290046	11.14	289330	12.73
OP33500-BSD	53931	4.17	190385	5.23	126900	6.76	234440	8.17	296194	11.14	304372	12.73
OP33500-MS	52441	4.17	182497	5.23	121769	6.78	213043	8.18	264743	11.15	276609	12.74
OP33500-MSD	50553	4.17	175402	5.23	119559	6.78	205204	8.18	259758	11.15	270199	12.74
JB38374-1	46003	4.17	160877	5.23	112624	6.78	191065	8.18	246511	11.14	261622	12.73
ZZZZZZ	45768	4.17	164578	5.23	111903	6.76	208694	8.16	265126	11.14	278314	12.73
ZZZZZZ	45998	4.17	166414	5.23	112401	6.76	212507	8.16	271232	11.14	283349	12.73
ZZZZZZ	56167	4.17	204626	5.23	135836	6.76	251166	8.16	316423	11.14	325647	12.74
ZZZZZZ	57267	4.17	204972	5.23	138432	6.76	253552	8.17	315465	11.14	325448	12.74
ZZZZZZ	49813	4.17	180956	5.23	124730	6.76	231152	8.16	296255	11.14	305090	12.73
ZZZZZZ	53276	4.17	183977	5.23	118059	6.77	208752	8.19	270068	11.15	286772	12.74
ZZZZZZ	45728	4.17	166272	5.23	111060	6.76	208189	8.16	262064	11.14	275745	12.74
ZZZZZZ	56571	4.17	199504	5.23	134184	6.76	244228	8.17	313075	11.15	328895	12.74
ZZZZZZ	50480	4.17	173877	5.23	117341	6.76	219934	8.16	279465	11.14	288481	12.73
ZZZZZZ	49387	4.17	162567	5.24	110244	6.76	207360	8.16	264895	11.14	273281	12.73
ZZZZZZ	51943	4.17	178104	5.23	117816	6.76	222991	8.16	282210	11.14	287533	12.73

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Semivolatile Internal Standard Area Summary

Page 1 of 2

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSW599-CC579				Injection Date:		06/11/13					
Lab File ID:	W13021.D				Injection Time:		18:41					
Instrument ID:	GCMSW				Method:		SW846 8270C					

	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
Check Std	53798	4.15	191495	5.20	130648	6.74	250187	8.14	321440	11.12	321150	12.71
Upper Limit <sup>a</sup>	107596	4.65	382990	5.70	261296	7.24	500374	8.64	642880	11.62	642300	13.21
Lower Limit <sup>b</sup>	26899	3.65	95748	4.70	65324	6.24	125094	7.64	160720	10.62	160575	12.21

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	IS 6 AREA	IS 6 RT
OP33502-MB	62749	4.15	225397	5.20	149481	6.74	278266	8.14	360969	11.11	361764	12.71
OP33502-BS	63812	4.15	225075	5.21	153842	6.74	286597	8.14	361215	11.11	368583	12.71
OP33502-BSD	59951	4.15	211569	5.20	143529	6.74	266439	8.14	335496	11.12	339309	12.71
OP33502-MS	59870	4.15	208670	5.21	138809	6.74	263715	8.14	327842	11.11	330509	12.71
OP33502-MSD	60061	4.15	212616	5.20	142175	6.74	268207	8.14	329509	11.11	335398	12.71
MC21362-12	59876	4.15	215839	5.20	142767	6.74	266599	8.14	333419	11.11	341765	12.71
ZZZZZZ	59251	4.15	209057	5.20	138514	6.74	258806	8.14	323970	11.11	330508	12.71
ZZZZZZ	64057	4.15	229587	5.21	151953	6.74	281770	8.14	351820	11.11	357487	12.71
ZZZZZZ	62589	4.15	222299	5.20	147381	6.74	274623	8.14	344976	11.11	351573	12.71
ZZZZZZ	60848	4.15	216930	5.20	145109	6.74	267374	8.14	334694	11.11	341279	12.71
ZZZZZZ	62879	4.15	220145	5.20	144073	6.74	265559	8.14	334065	11.11	333595	12.71
ZZZZZZ	63332	4.15	223649	5.20	148444	6.74	272051	8.14	343089	11.11	342199	12.71
ZZZZZZ	64259	4.15	227383	5.20	150140	6.74	277815	8.14	348342	11.11	350999	12.71
ZZZZZZ	55943	4.15	200630	5.20	133002	6.74	245361	8.14	311361	11.11	322087	12.71
ZZZZZZ	55269	4.15	196078	5.21	129470	6.74	242004	8.14	302618	11.11	308704	12.71
ZZZZZZ	55894	4.15	195330	5.20	128056	6.74	238754	8.14	298302	11.11	304588	12.71
ZZZZZZ	57639	4.15	202522	5.20	134712	6.74	249258	8.14	318034	11.11	318441	12.71
ZZZZZZ	58030	4.15	202680	5.21	135337	6.74	250837	8.14	313853	11.11	321310	12.71
ZZZZZZ	57153	4.15	200692	5.20	132216	6.74	246646	8.14	308416	11.11	313348	12.71
ZZZZZZ	57252	4.15	203767	5.20	134565	6.74	249754	8.14	308224	11.11	308633	12.71
ZZZZZZ	59752	4.15	209745	5.20	136394	6.74	247875	8.14	306020	11.12	316443	12.71
ZZZZZZ	56855	4.15	200320	5.20	133593	6.74	246304	8.14	310337	11.11	316918	12.71
JB38251-1	61307	4.15	199892	5.21	135668	6.75	243630	8.15	316782	11.12	330423	12.72
JB38251-2 <sup>c</sup>	51879	4.15	185327	5.21	123815	6.74	226016	8.14	286681	11.11	300514	12.71
JB38251-3	59599	4.15	217291	5.20	142074	6.74	261279	8.14	328093	11.11	339590	12.71
JB38251-4	53964	4.15	189536	5.20	126503	6.74	233159	8.14	297921	11.11	314247	12.71
ZZZZZZ	53971	4.15	194460	5.20	127673	6.74	234661	8.14	301358	11.11	310794	12.71

IS 1 = 1,4-Dichlorobenzene-d4

IS 2 = Naphthalene-d8

IS 3 = Acenaphthene-D10

IS 4 = Phenanthrene-d10

IS 5 = Chrysene-d12

IS 6 = Perylene-d12

## Semivolatile Internal Standard Area Summary

Page 2 of 2

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	MSW599-CC579	Injection Date:	06/11/13
Lab File ID:	W13021.D	Injection Time:	18:41
Instrument ID:	GCMSW	Method:	SW846 8270C

Lab Sample ID	IS 1 AREA	IS 2 RT	IS 3 AREA	IS 4 RT	IS 5 AREA	IS 6 RT
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(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

(c) Elevated RL due to dilution required for matrix interference.

# Semivolatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8270C

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JB38251-1	W13044.D	64.0	61.0	66.0
JB38251-2	W13045.D	47.0	56.0	69.0
JB38251-3	W13046.D	52.0	62.0	76.0
JB38251-4	W13047.D	60.0	62.0	73.0
OP33500-BS	W13002.D	56.0	62.0	67.0
OP33500-BSD	W13003.D	57.0	61.0	73.0
OP33500-MB	W13001.D	60.0	66.0	73.0
OP33500-MS	W13004.D	64.0	67.0	79.0
OP33500-MSD	W13005.D	63.0	67.0	76.0

Surrogate Compounds	Recovery Limits
------------------------	--------------------

S1 = Nitrobenzene-d5	30-130%
S2 = 2-Fluorobiphenyl	30-130%
S3 = Terphenyl-d14	30-130%

**Initial Calibration Summary**

Job Number: JB38251

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Response Factor Report MSW

Method : C:\msdchem\1\met...\\W130530\_8270+.m ( RTE Integrator )  
 Title : SW-864 Method 8270  
 Last Update : Thu May 30 18:03:11 2013  
 Response via : Initial Calibration

## Calibration Files

160 =w12587.D	120 =w12586.D	80 =w12585.D	20 =w12583.D
5 =w12581.D	2 =w12580.D	10 =w12582.D	50 =w12584.D

Compound	160	120	80	20	5	2	10	50	Avg	%RSD
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1) I 1,4-Dichlorobenzene-d	-----	ISTD-----								
2) N-nitrosodim	0.622	0.609	0.636	0.633	0.609		0.653	0.637	0.628	2.59
3) Pyridine	1.104	1.099	1.162	1.188	1.297		1.209	1.191	1.179	5.74
4) Aniline		0.504	0.541	0.589	0.572	0.544	0.588	0.574	0.559	5.52
5) 2-Fluorophen	1.096	1.081	1.070	1.092	1.036	1.084	1.121	1.086	1.083	2.23
6) bis(2-Chloro	0.652	0.651	0.671	0.682	0.686	0.660	0.714	0.684	0.675	3.12
7) Phenol-d5	1.355	1.336	1.312	1.354	1.233	1.250	1.371	1.349	1.320	3.90
8) Phenol	1.516	1.391	1.437	1.423	1.334	1.302	1.421	1.440	1.408	4.71
9) 2-Chlorophen	1.292	1.264	1.297	1.297	1.249	1.295	1.313	1.304	1.289	1.67
10) 1,3-Dichloro	1.452	1.434	1.467	1.488	1.495	1.488	1.547	1.501	1.484	2.31
11) 1,4-Dichloro	1.527	1.517	1.561	1.564	1.573	1.587	1.659	1.559	1.568	2.77
12) 1,2-Dichloro	1.404	1.393	1.438	1.451	1.434	1.407	1.488	1.437	1.431	2.13
13) Benzyl alcoh	0.814	0.801	0.813	0.788	0.739		0.803	0.824	0.798	3.51
14) bis(2-chloro	0.857	0.850	0.878	0.908	0.902	0.845	0.959	0.899	0.887	4.28
15) o-cresol	1.086	1.062	1.106	1.118	1.059	1.041	1.133	1.125	1.091	3.14
16) Acetophenone	1.670	1.679	1.665	1.765	1.688	1.694	1.824	1.759	1.718	3.35
17) Hexachloroet	0.486	0.476	0.493	0.494	0.493	0.478	0.516	0.504	0.493	2.62
18) N-Nitroso-di	0.735	0.719	0.743	0.723	0.621		0.751	0.757	0.721	6.43
19) m+p-cresols	1.191	1.172	1.178	1.211	1.132	1.107	1.225	1.214	1.179	3.50
20) 4-methylphen	1.191	1.172	1.178	1.211	1.132	1.107	1.225	1.214	1.179	3.50
21) I 1,4-Dichlorobenzene-d	-----	ISTD-----								
22) Benzaldehyde								0.000#	-1.00	

23) I Naphthalene-d8	-----	ISTD-----								
24) Nitrobenzene	0.309	0.301	0.298	0.307	0.269	0.256	0.315	0.309	0.295	7.23
25) Nitrobenzene	0.304	0.298	0.309	0.316	0.292	0.271	0.326	0.319	0.304	5.68
26) Isophorone	0.550	0.538	0.559	0.575	0.565	0.562	0.591	0.580	0.565	3.02
27) 2-Nitropheno	0.205	0.198	0.204	0.198	0.170		0.197	0.204	0.196	6.26
28) 2,4-Dimethyl	0.329	0.317	0.330	0.341	0.330		0.339	0.341	0.332	2.62
29) bis(2-Chloro	0.348	0.342	0.350	0.358	0.364		0.373	0.359	0.356	2.93
30) Benzoic acid	0.276	0.259	0.266	0.213			0.174	0.259	0.241	16.39

---- Linear regression --- Coefficient = 0.9990

Response Ratio = -0.02657 + 0.27590 \*A

31) 2,4-Dichloro	0.346	0.340	0.347	0.348	0.338		0.344	0.356	0.345	1.77
32) 1,2,4-Trichl	0.373	0.365	0.379	0.383	0.388	0.391	0.399	0.388	0.383	2.75
33) Naphthalene	0.983	0.981	1.015	1.042	1.049	1.059	1.093	1.041	1.033	3.69
34) 2,6-Dichloro	0.336	0.330	0.342	0.348	0.336		0.353	0.352	0.342	2.62
35) 4-Chloroanil	0.434	0.426	0.441	0.448	0.422		0.446	0.457	0.439	2.84
36) Hexachlorobu	0.238	0.235	0.246	0.251	0.257	0.256	0.260	0.253	0.249	3.62
37) 4-Chloro-3-m	0.298	0.288	0.296	0.300	0.279		0.302	0.306	0.295	3.13
38) 2-Methylnaph	0.746	0.727	0.758	0.787	0.768	0.761	0.814	0.785	0.768	3.51
39) 1-Methylnaph	0.703	0.704	0.715	0.755	0.740	0.747	0.779	0.751	0.737	3.69
40) 1,2,4,5-Tetr	0.454	0.453	0.459	0.489	0.472	0.492	0.502	0.483	0.475	3.99

**Initial Calibration Summary**

Job Number: JB38251

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

41) I	Naphthalene-d8a	-----ISTD-----								
42)	Caprolactam									
43)	I	Acenaphthene-d10	-----ISTD-----							
44)	Pentachloron	0.186	0.182	0.183	0.183	0.180	0.196	0.185	3.10	
45)	Hexachlorocyclo	0.420	0.409	0.447	0.398	0.361	0.406	0.438	0.411	
46)	2,4,6-Trichloro	0.435	0.426	0.437	0.434	0.430	0.441	0.452	0.436	
47)	2,4,5-Trichloro	0.464	0.446	0.470	0.463	0.447	0.473	0.485	0.464	
48)	2-Fluorobiphenyl	1.311	1.307	1.330	1.386	1.373	1.407	1.471	1.400	
49)	2-Chloronaphthalene	1.059	1.047	1.088	1.097	1.121	1.100	1.140	1.122	
50)	Acenaphthylene	1.699	1.679	1.790	1.821	1.828	1.784	1.879	1.868	
51)	Dimethylphthalate	1.304	1.277	1.339	1.362	1.360	1.335	1.411	1.396	
52)	2,4-Dinitrotoluene	0.403	0.390	0.403	0.380		0.376	0.415	0.394	
53)	Acenaphthene	1.061	1.051	1.097	1.121	1.146	1.116	1.164	1.146	
54)	2,4-Dinitrophenol	0.247	0.234	0.240	0.195		0.233	0.230	0.230	
55)	Dibenzofuran	1.636	1.613	1.696	1.744	1.756	1.745	1.788	1.778	
56)	2,6-Dinitrotoluene	0.305	0.300	0.312	0.286		0.277	0.317	0.299	
57)	4-Nitrophenol	0.183	0.180	0.184	0.183		0.173	0.194	0.183	
58)	2,3,4,6-Tetraphenylbenzene	0.457	0.444	0.463	0.461	0.452	0.476	0.486	0.463	
59)	Fluorene	1.274	1.261	1.334	1.374	1.401	1.379	1.429	1.405	
60)	4-Chlorophenol	0.711	0.708	0.763	0.783	0.792	0.764	0.802	0.803	
61)	Diethylphthalate	1.177	1.155	1.212	1.226	1.248	1.209	1.272	1.265	
62)	2-nitroaniline	0.353	0.339	0.346	0.307		0.295	0.347	0.331	
63)	3-nitroaniline	0.302	0.292	0.298	0.287		0.278	0.309	0.294	
64)	4-nitroaniline	0.305	0.294	0.299	0.286		0.271	0.313	0.295	
65)	Acenaphthene-d10a	-----ISTD-----								
66)	1,1'-Biphenyl									
67) I	Phenanthrene-d10	-----ISTD-----								
68)	4,6-Dinitrophenol	0.169	0.162	0.167	0.147	0.144	0.164	0.159	6.70	
69)	n-Nitrosodiphenylamine	0.497	0.491	0.519	0.525	0.520	0.566	0.546	0.532	
70)	1,2-Diphenylbenzene	0.521	0.442	0.467	0.474	0.488	0.483	0.496	0.480	
71)	2,4,6-Tribromophenol	0.166	0.165	0.163	0.159	0.146	0.166	0.164	0.161	
72)	4-Bromophenol	0.270	0.265	0.278	0.273	0.278	0.260	0.292	0.284	
73)	Hexachlorobenzene	0.291	0.288	0.305	0.302	0.302	0.300	0.317	0.306	
74)	Pentachlorobenzene	0.225	0.218	0.222	0.208		0.211	0.224	0.218	
75)	Phenanthrene	1.017	1.009	1.061	1.094	1.107	1.124	1.153	1.097	
76)	Anthracene	1.046	1.057	1.105	1.159	1.162	1.136	1.209	1.175	
77)	Carbazole	0.928	0.922	0.948	0.989	0.989	0.947	1.024	1.009	
78)	Di-n-butylphthalate	1.062	1.056	1.107	1.086	1.074	1.147	1.135	1.095	
79)	Fluoranthene	1.184	1.192	1.243	1.296	1.292	1.262	1.362	1.308	
80) I	Phenanthrene-d10a	-----ISTD-----								
81)	Atrazine									
82) I	Chrysene-d12	-----ISTD-----								
83)	Benzidine	0.259	0.250	0.285	0.268	0.241	0.284	0.264	6.83	
84)	Pyrene	1.027	1.004	1.068	1.087	1.068	1.007	1.125	1.102	
85)	Terphenyl-d1	0.895	0.874	0.909	0.953	0.917	0.876	0.994	0.956	
86)	3,3'-Dimethylbenzene	0.402	0.386	0.438	0.414	0.270	0.404	0.444	0.394	
87)	Butylbenzylbenzene	0.352	0.333	0.348	0.302	0.262	0.300	0.338	0.319	
88)	3,3'-Dichlorobiphenyl	0.429	0.422	0.441	0.399	0.317	0.391	0.446	0.406	
89)	Benzo[a]anthracene	0.996	0.992	1.044	1.081	1.084	1.047	1.119	1.094	
90)	Chrysene	0.985	0.960	1.016	1.050	1.066	1.045	1.082	1.057	
91)	bis(2-Ethylhexyl)benzene	0.537	0.516	0.540	0.460	0.385	0.459	0.522	0.489	
92) I	Perylene-d12	-----ISTD-----								
93)	Di-n-octylphthalate	0.810	0.837	0.840	0.738	0.546	0.682	0.815	0.753	
94)	Benzo[b]fluoranthene	1.343	1.313	1.306	1.177	1.064	0.992	1.211	1.189	

## Initial Calibration Summary

Page 3 of 3

Job Number: JB38251

Sample: MSW579-ICC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12584.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

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95)	Benzo[k]fluo	1.079	1.092	1.061	1.239	1.264	1.220	1.260	1.252	1.183	7.55
96)	Benzo[a]pyre	1.052	1.038	1.103	1.135	1.005	0.925	1.086	1.128	1.059	6.62
97)	Indeno[1,2,3]	1.434	1.405	1.437	1.392	1.278	1.141	1.387	1.438	1.364	7.64
98)	Dibenz[a,h]a	1.166	1.148	1.178	1.156	1.061	0.945	1.156	1.199	1.126	7.43
99)	Benzo[g,h,i]	1.183	1.161	1.183	1.138	1.096	1.011	1.161	1.175	1.139	5.19

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(#) = Out of Range    ### Number of calibration levels exceeded format    ###

W130530\_8270+.m

Fri May 31 15:37:31 2013

9.7.1

9

**Initial Calibration Verification**

Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12588.D Vial: 9  
 Acq On : 30 May 2013 12:36 pm Operator: kristinr  
 Sample : ICV579-50 Inst : MSW  
 Misc : op33225,msw579,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu May 30 18:03:11 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	89	0.00	4.21
2	N-nitrosodimethylamine		-----NA-----				
3 T	Pyridine		-----NA-----				
4 T	Aniline		-----NA-----				
5 S	2-Fluorophenol	1.083	1.078	0.5	89	0.00	3.26
6 T	bis(2-Chloroethyl)ether		-----NA-----				
7 S	Phenol-d5	1.320	1.259	4.6	83	0.00	3.94
8 C	Phenol	1.408	1.400	0.6	87	0.00	3.95
9 M	2-Chlorophenol	1.289	1.280	0.7	88	0.00	4.07
10 T	1,3-Dichlorobenzene		-----NA-----				
11 C	1,4-Dichlorobenzene		-----NA-----				
12 T	1,2-Dichlorobenzene		-----NA-----				
13 T	Benzyl alcohol		-----NA-----				
14 T	bis(2-chloroisopropyl)eth		-----NA-----				
15 T	o-cresol	1.091	1.090	0.1	86	0.00	4.43
16 T	Acetophenone		-----NA-----				
17 T	Hexachloroethane		-----NA-----				
18 P	N-Nitroso-di-n-propylamin		-----NA-----				
19 T	m+p-cresols	1.179	1.189	-0.8	87	0.00	4.55
20	4-methylphenol	1.179	1.189	-0.8	87	0.00	4.55
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0# -0.06		4.21
22	Benzaldehyde		-----NA-----				
23 I	Naphthalene-d8	1.000	1.000	0.0	88	0.00	5.27
24 S	Nitrobenzene-d5		-----NA-----				
25 T	Nitrobenzene		-----NA-----				
26 T	Isophorone		-----NA-----				
27 C	2-Nitrophenol	0.196	0.198	-1.0	85	0.00	4.97
28 T	2,4-Dimethylphenol	0.332	0.337	-1.5	87	0.00	4.99
29 T	bis(2-Chloroethoxy)methan		-----NA-----				
		-----Amount	Calc.	%Drift			
30 T	Benzoic acid	50.000	56.295	-12.6	98	-0.01	5.08
		-----AvgRF	CCRF	%Dev			
31 C	2,4-Dichlorophenol	0.345	0.349	-1.2	86	0.00	5.16
32 M	1,2,4-Trichlorobenzene		-----NA-----				
33 T	Naphthalene		-----NA-----				
34 T	2,6-Dichlorophenol	0.342	0.345	-0.9	86	0.00	5.36
35 T	4-Chloroaniline		-----NA-----				
36 C	Hexachlorobutadiene		-----NA-----				

**Initial Calibration Verification**

Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol	0.295	0.298	-1.0	86	0.00	5.76
38 T	2-Methylnaphthalene		-----NA-----				
39 T	1-Methylnaphthalene		-----NA-----				
40 T	1,2,4,5-Tetrachlorobenzene		-----NA-----				
41 I	Naphthalene-d8a	1.000	1.000	0.0	0#	-0.06	5.27
42	Caprolactam		-----NA-----				
43 I	Acenaphthene-d10	1.000	1.000	0.0	88	0.00	6.81
44 T	Pentachloronitrobenzene		-----NA-----				
45 P	Hexachlorocyclopentadiene		-----NA-----				
46 C	2,4,6-Trichlorophenol	0.436	0.434	0.5	85	0.00	6.15
47 T	2,4,5-Trichlorophenol	0.464	0.482	-3.9	88	0.00	6.18
48 S	2-Fluorobiphenyl		-----NA-----				
49 T	2-Chloronaphthalene		-----NA-----				
50 M	Acenaphthylene		-----NA-----				
51 T	Dimethylphthalate		-----NA-----				
52 T	2,4-Dinitrotoluene		-----NA-----				
53 C	Acenaphthene		-----NA-----				
54 P	2,4-Dinitrophenol	0.230	0.208	9.6	79	0.00	6.87
55 T	Dibenzofuran		-----NA-----				
56 M	2,6-Dinitrotoluene		-----NA-----				
57 P	4-Nitrophenol	0.183	0.197	-7.7	90	0.00	6.93
58 T	2,3,4,6-Tetrachlorophenol	0.463	0.474	-2.4	86	0.00	7.14
59 T	Fluorene		-----NA-----				
60 T	4-Chlorophenyl-phenylethane		-----NA-----				
61 T	Diethylphthalate		-----NA-----				
62 T	2-nitroaniline		-----NA-----				
63 T	3-nitroaniline		-----NA-----				
64 T	4-nitroaniline		-----NA-----				
65	Acenaphthene-d10a	1.000	1.000	0.0	0#	-0.05	6.81
66	1,1'-Biphenyl		-----NA-----				
67 I	Phenanthrene-d10	1.000	1.000	0.0	90	0.00	8.22
68 T	4,6-Dinitro-2-methylphenol	0.159	0.162	-1.9	89	-0.01	7.39
69 C	n-Nitrosodiphenylamine		-----NA-----				
70 T	1,2-Diphenylhydrazine		-----NA-----				
71 S	2,4,6-Tribromophenol	0.161	0.152	5.6	83	0.00	7.55
72 T	4-Bromophenyl-phenylether		-----NA-----				
73 T	Hexachlorobenzene		-----NA-----				
74 C	Pentachlorophenol	0.218	0.234	-7.3	94	0.00	8.09
75 T	Phenanthrene		-----NA-----				
76 T	Anthracene		-----NA-----				
77 T	Carbazole		-----NA-----				
78 T	Di-n-butylphthalate		-----NA-----				
79 C	Fluoranthene		-----NA-----				
80 I	Phenanthrene-d10a	1.000	1.000	0.0	0#	0.00	8.27
81	Atrazine		-----NA-----				
82 I	Chrysene-d12	1.000	1.000	0.0	98	-0.01	11.20
83 T	Benzidine		-----NA-----				
84 M	Pyrene		-----NA-----				
85 S	Terphenyl-d14		-----NA-----				
86	3,3-Dimethylbenzidine		-----NA-----				
87 T	Butylbenzylphthalate		-----NA-----				
88 T	3,3'-Dichlorobenzidine		-----NA-----				
89 T	Benzo[a]anthracene		-----NA-----				
90 T	Chrysene		-----NA-----				

9.7.2  
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# Initial Calibration Verification

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Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12588.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat		-----NA-----							
92 I	Perylene-d12	1.000	1.000	0.0	100	0.00	12.79			
93 C	Di-n-octylphthalate		-----NA-----							
94 T	Benzo[b]fluoranthene		-----NA-----							
95 T	Benzo[k]fluoranthene		-----NA-----							
96 C	Benzo[a]pyrene		-----NA-----							
97 T	Indeno[1,2,3-cd]pyrene		-----NA-----							
98 T	Dibenz[a,h]anthracene		-----NA-----							
99 T	Benzo[g,h,i]perylene		-----NA-----							

(#) = Out of Range  
w12584.D W130530\_8270+.m

SPCC's out = 2 CCC's out = 7  
Fri May 31 15:20:54 2013

9.7.2  
9

**Initial Calibration Verification**

Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12589.D Vial: 10  
 Acq On : 30 May 2013 12:59 pm Operator: kristinr  
 Sample : ICV579-20 Inst : MSW  
 Misc : op33225,msw579,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu May 30 18:03:11 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	86	0.00
2 S	N-nitrosodimethylamine	0.628	0.652	-3.8	88	0.00
3 T	Pyridine	1.179	1.137	3.6	82	0.02
4 T	Aniline			-----NA-----		
5 S	2-Fluorophenol			-----NA-----		
6 T	bis(2-Chloroethyl)ether	0.675	0.679	-0.6	85	0.00
7 S	Phenol-d5			-----NA-----		
8 C	Phenol			-----NA-----		
9 M	2-Chlorophenol			-----NA-----		
10 T	1,3-Dichlorobenzene	1.484	1.533	-3.3	88	0.00
11 C	1,4-Dichlorobenzene	1.568	1.591	-1.5	87	0.00
12 T	1,2-Dichlorobenzene	1.431	1.491	-4.2	88	0.00
13 T	Benzyl alcohol	0.798	0.799	-0.1	87	0.00
14 T	bis(2-chloroisopropyl)eth	0.887	1.057	-19.2	100	0.00
15 T	o-cresol			-----NA-----		
16 T	Acetophenone	1.718	1.695	1.3	82	0.00
17 T	Hexachloroethane	0.493	0.510	-3.4	88	0.00
18 P	N-Nitroso-di-n-propylamin	0.721	0.744	-3.2	88	-0.01
19 T	m+p-cresols			-----NA-----		
20	4-methylphenol			-----NA-----		
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0# -0.06	4.21
22	Benzaldehyde			-----NA-----		
23 I	Naphthalene-d8	1.000	1.000	0.0	86	0.00
24 S	Nitrobenzene-d5	0.295	0.296	-0.3	83	0.00
25 T	Nitrobenzene	0.304	0.308	-1.3	84	0.00
26 T	Isophorone	0.565	0.550	2.7	82	-0.01
27 C	2-Nitrophenol			-----NA-----		
28 T	2,4-Dimethylphenol			-----NA-----		
29 T	bis(2-Chloroethoxy)methan	0.356	0.363	-2.0	87	0.00
30 T	Benzoic acid			-----NA-----		
31 C	2,4-Dichlorophenol			-----NA-----		
32 M	1,2,4-Trichlorobenzene	0.383	0.404	-5.5	91	0.00
33 T	Naphthalene	1.033	1.076	-4.2	89	0.00
34 T	2,6-Dichlorophenol			-----NA-----		
35 T	4-Chloroaniline			-----NA-----		
36 C	Hexachlorobutadiene	0.249	0.259	-4.0	89	0.00

# Initial Calibration Verification

Page 2 of 3

Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol		-----NA-----				
38 T	2-Methylnaphthalene	0.768	0.785	-2.2	86	0.00	5.88
39 T	1-Methylnaphthalene	0.737	0.748	-1.5	85	0.00	5.98
40 T	1,2,4,5-Tetrachlorobenzene	0.475	0.483	-1.7	85	0.00	6.06
41 I	Naphthalene-d8a	1.000	1.000	0.0	0#	-0.06	5.27
42	Caprolactam		-----NA-----				
43 I	Acenaphthene-d10	1.000	1.000	0.0	84	0.00	6.81
44 T	Pentachloronitrobenzene	0.185	0.183	1.1	84	0.00	8.17
45 P	Hexachlorocyclopentadiene	0.411	0.232	43.6#	49#	0.00	6.08
46 C	2,4,6-Trichlorophenol		-----NA-----				
47 T	2,4,5-Trichlorophenol		-----NA-----				
48 S	2-Fluorobiphenyl	1.373	1.399	-1.9	85	0.00	6.22
49 T	2-Chloronaphthalene	1.097	1.190	-8.5	91	0.00	6.30
50 M	Acenaphthylene	1.794	1.501	16.3	69	0.00	6.67
51 T	Dimethylphthalate	1.348	1.399	-3.8	86	0.00	6.60
52 T	2,4-Dinitrotoluene	0.394	0.416	-5.6	92	-0.01	7.01
53 C	Acenaphthene	1.113	1.206	-8.4	91	0.00	6.84
54 P	2,4-Dinitrophenol		-----NA-----				
55 T	Dibenzofuran	1.720	1.792	-4.2	86	0.00	6.98
56 M	2,6-Dinitrotoluene	0.299	0.295	1.3	87	0.00	6.66
57 P	4-Nitrophenol		-----NA-----				
58 T	2,3,4,6-Tetrachlorophenol		-----NA-----				
59 T	Fluorene	1.357	1.495	-10.2	92	0.00	7.30
60 T	4-Chlorophenyl-phenylether	0.766	0.839	-9.5	90	0.00	7.30
61 T	Diethylphthalate	1.221	1.313	-7.5	90	-0.01	7.24
62 T	2-nitroaniline	0.331	0.335	-1.2	92	0.00	6.42
63 T	3-nitroaniline	0.294	0.264	10.2	77	0.00	6.78
64 T	4-nitroaniline	0.295	0.295	0.0	87	-0.01	7.35
65	Acenaphthene-d10a	1.000	1.000	0.0	0#	-0.26	6.60
66	1,1'-Biphenyl		-----NA-----				
67 I	Phenanthrene-d10	1.000	1.000	0.0	88	0.00	8.22
68 T	4,6-Dinitro-2-methylphenol		-----NA-----				
69 C	n-Nitrosodiphenylamine	0.524	0.506	3.4	85	0.00	7.41
70 T	1,2-Diphenylhydrazine	0.481	0.451	6.2	84	0.00	7.45
71 S	2,4,6-Tribromophenol		-----NA-----				
72 T	4-Bromophenyl-phenylether	0.275	0.275	0.0	89	0.00	7.77
73 T	Hexachlorobenzene	0.301	0.313	-4.0	91	0.00	7.92
74 C	Pentachlorophenol		-----NA-----				
75 T	Phenanthrene	1.083	1.134	-4.7	91	0.00	8.24
76 T	Anthracene	1.131	1.147	-1.4	87	0.00	8.29
77 T	Carbazole	0.969	1.039	-7.2	93	0.00	8.46
78 T	Di-n-butylphthalate	1.095	1.067	2.6	87	0.00	8.89
79 C	Fluoranthene	1.267	1.437	-13.4	98	0.00	9.53
80 I	Phenanthrene-d10a	1.000	1.000	0.0	0#	0.00	8.27
81	Atrazine		-----NA-----				
82 I	Chrysene-d12	1.000	1.000	0.0	95	0.00	11.20
83 T	Benzidine		-----NA-----				
84 M	Pyrene	1.061	1.071	-0.9	93	0.00	9.78
85 S	Terphenyl-d14	0.922	0.885	4.0	88	0.00	9.98
86	3,3-Dimethylbenzidine		-----NA-----				
87 T	Butylbenzylphthalate	0.319	0.307	3.8	96	0.00	10.60
88 T	3,3'-Dichlorobenzidine		-----NA-----				
89 T	Benzo[a]anthracene	1.057	1.145	-8.3	100	0.00	11.18
90 T	Chrysene	1.033	1.076	-4.2	97	0.00	11.23

9.7.3  
9

# Initial Calibration Verification

Page 3 of 3

Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12589.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat	0.489	0.457	6.5	94	0.00	11.32
92 I	Perylene-d12	1.000	1.000	0.0	94	0.00	12.79
93 C	Di-n-octylphthalate	0.753	0.778	-3.3	100	0.00	12.01
94 T	Benzo[b]fluoranthene	1.199	1.230	-2.6	99	0.00	12.40
95 T	Benzo[k]fluoranthene	1.183	1.256	-6.2	96	-0.01	12.42
96 C	Benzo[a]pyrene	1.059	1.015	4.2	84	-0.01	12.73
97 T	Indeno[1,2,3-cd]pyrene	1.364	1.430	-4.8	97	-0.02	13.97
98 T	Dibenz[a,h]anthracene	1.126	1.216	-8.0	99	-0.01	13.98
99 T	Benzo[g,h,i]perylene	1.139	1.192	-4.7	99	-0.01	14.29

(#) = Out of Range  
w12583.D W130530\_8270+.m

SPCC's out = 2 CCC's out = 6  
Fri May 31 15:36:06 2013

9.7.3

9

**Initial Calibration Verification**

Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130530\w12590.D Vial: 11  
 Acq On : 30 May 2013 1:22 pm Operator: kristinr  
 Sample : ICV579-20 Inst : MSW  
 Misc : op33225,msw579,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu May 30 18:03:11 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	83	0.00	4.21
2	N-nitrosodimethylamine		-----NA-----				
3 T	Pyridine		-----NA-----				
4 T	Aniline	0.559	0.531	5.0	75	0.00	3.98
5 S	2-Fluorophenol		-----NA-----				
6 T	bis(2-Chloroethyl)ether		-----NA-----				
7 S	Phenol-d5		-----NA-----				
8 C	Phenol		-----NA-----				
9 M	2-Chlorophenol		-----NA-----				
10 T	1,3-Dichlorobenzene		-----NA-----				
11 C	1,4-Dichlorobenzene		-----NA-----				
12 T	1,2-Dichlorobenzene		-----NA-----				
13 T	Benzyl alcohol		-----NA-----				
14 T	bis(2-chloroisopropyl)eth		-----NA-----				
15 T	o-cresol		-----NA-----				
16 T	Acetophenone		-----NA-----				
17 T	Hexachloroethane		-----NA-----				
18 P	N-Nitroso-di-n-propylamin		-----NA-----				
19 T	m+p-cresols		-----NA-----				
20	4-methylphenol		-----NA-----				
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	0# -0.06	4.21	
22	Benzaldehyde		-----NA-----				
23 I	Naphthalene-d8	1.000	1.000	0.0	81	0.00	5.27
24 S	Nitrobenzene-d5		-----NA-----				
25 T	Nitrobenzene		-----NA-----				
26 T	Isophorone		-----NA-----				
27 C	2-Nitrophenol		-----NA-----				
28 T	2,4-Dimethylphenol		-----NA-----				
29 T	bis(2-Chloroethoxy)methan		-----NA-----				
30 T	Benzoic acid		-----NA-----				
31 C	2,4-Dichlorophenol		-----NA-----				
32 M	1,2,4-Trichlorobenzene		-----NA-----				
33 T	Naphthalene		-----NA-----				
34 T	2,6-Dichlorophenol		-----NA-----				
35 T	4-Chloroaniline	0.439	0.399	9.1	72	0.00	5.35
36 C	Hexachlorobutadiene		-----NA-----				

# Initial Calibration Verification

Page 2 of 3

Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol		-----	NA-----			
38 T	2-Methylnaphthalene		-----	NA-----			
39 T	1-Methylnaphthalene		-----	NA-----			
40 T	1,2,4,5-Tetrachlorobenzene		-----	NA-----			
41 I	Naphthalene-d8a	1.000	1.000	0.0	0# -0.06	5.27	
42	Caprolactam		-----	NA-----			
43 I	Acenaphthene-d10	1.000	1.000	0.0	78 0.00	6.81	
44 T	Pentachloronitrobenzene		-----	NA-----			
45 P	Hexachlorocyclopentadiene		-----	NA-----			
46 C	2,4,6-Trichlorophenol		-----	NA-----			
47 T	2,4,5-Trichlorophenol		-----	NA-----			
48 S	2-Fluorobiphenyl		-----	NA-----			
49 T	2-Chloronaphthalene		-----	NA-----			
50 M	Acenaphthylene		-----	NA-----			
51 T	Dimethylphthalate		-----	NA-----			
52 T	2,4-Dinitrotoluene		-----	NA-----			
53 C	Acenaphthene		-----	NA-----			
54 P	2,4-Dinitrophenol		-----	NA-----			
55 T	Dibenzofuran		-----	NA-----			
56 M	2,6-Dinitrotoluene		-----	NA-----			
57 P	4-Nitrophenol		-----	NA-----			
58 T	2,3,4,6-Tetrachlorophenol		-----	NA-----			
59 T	Fluorene		-----	NA-----			
60 T	4-Chlorophenyl-phenylethane		-----	NA-----			
61 T	Diethylphthalate		-----	NA-----			
62 T	2-nitroaniline		-----	NA-----			
63 T	3-nitroaniline		-----	NA-----			
64 T	4-nitroaniline		-----	NA-----			
65	Acenaphthene-d10a	1.000	1.000	0.0	0# -0.05	6.81	
66	1,1'-Biphenyl		-----	NA-----			
67 I	Phenanthrene-d10	1.000	1.000	0.0	79 0.00	8.22	
68 T	4,6-Dinitro-2-methylphenol		-----	NA-----			
69 C	n-Nitrosodiphenylamine		-----	NA-----			
70 T	1,2-Diphenylhydrazine		-----	NA-----			
71 S	2,4,6-Tribromophenol		-----	NA-----			
72 T	4-Bromophenyl-phenylether		-----	NA-----			
73 T	Hexachlorobenzene		-----	NA-----			
74 C	Pentachlorophenol		-----	NA-----			
75 T	Phenanthrene		-----	NA-----			
76 T	Anthracene		-----	NA-----			
77 T	Carbazole		-----	NA-----			
78 T	Di-n-butylphthalate		-----	NA-----			
79 C	Fluoranthene		-----	NA-----			
80 I	Phenanthrene-d10a	1.000	1.000	0.0	0# 0.00	8.27	
81	Atrazine		-----	NA-----			
82 I	Chrysene-d12	1.000	1.000	0.0	85 -0.01	11.20	
83 T	Benzidine	0.264	0.405	-53.4#	129 0.00	9.68	
84 M	Pyrene		-----	NA-----			
85 S	Terphenyl-d14		-----	NA-----			
86	3,3-Dimethylbenzidine		-----	NA-----			
87 T	Butylbenzylphthalate		-----	NA-----			
88 T	3,3'-Dichlorobenzidine	0.406	0.374	7.9	80 0.00	11.17	
89 T	Benzo[a]anthracene		-----	NA-----			
90 T	Chrysene		-----	NA-----			

9.7.4  
9

# Initial Calibration Verification

Page 3 of 3

Job Number: JB38251

Sample: MSW579-ICV579

Account: ALNJ Accutest New Jersey

Lab FileID: W12590.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat		-----NA-----						
92 I	Perylene-d12	1.000	1.000	0.0	88	0.00	12.79		
93 C	Di-n-octylphthalate		-----NA-----						
94 T	Benzo[b]fluoranthene		-----NA-----						
95 T	Benzo[k]fluoranthene		-----NA-----						
96 C	Benzo[a]pyrene		-----NA-----						
97 T	Indeno[1,2,3-cd]pyrene		-----NA-----						
98 T	Dibenz[a,h]anthracene		-----NA-----						
99 T	Benzo[g,h,i]perylene		-----NA-----						

(#) = Out of Range  
w12583.D W130530\_8270+.m

SPCC's out = 4 CCC's out = 13  
Fri May 31 15:36:08 2013

9.7.4  
9

**Continuing Calibration Summary**

Job Number: JB38251

Sample: MSW598-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12999.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\2\DATA\W130611\w12999.D Vial: 96  
 Acq On : 11 Jun 2013 7:57 am Operator: kristinr  
 Sample : cc579-50, tcl11 Inst : MSW  
 Misc : op33474,msw598,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu Jun 06 09:42:09 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	104	-0.04	4.17
2	N-nitrosodimethylamine		-----NA-----				
3 T	Pyridine		-----NA-----				
4 T	Aniline		-----NA-----				
5 S	2-Fluorophenol		-----NA-----				
6 T	bis(2-Chloroethyl)ether		-----NA-----				
7 S	Phenol-d5		-----NA-----				
8 C	Phenol		-----NA-----				
9 M	2-Chlorophenol		-----NA-----				
10 T	1,3-Dichlorobenzene		-----NA-----				
11 C	1,4-Dichlorobenzene		-----NA-----				
12 T	1,2-Dichlorobenzene		-----NA-----				
13 T	Benzyl alcohol		-----NA-----				
14 T	bis(2-chloroisopropyl)eth		-----NA-----				
15 T	o-cresol		-----NA-----				
16 T	Acetophenone		-----NA-----				
17 T	Hexachloroethane		-----NA-----				
18 P	N-Nitroso-di-n-propylamin		-----NA-----				
19 T	m+p-cresols		-----NA-----				
20	4-methylphenol		-----NA-----				

21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	83	-0.10	4.17
22	Benzaldehyde	4.052	3.465	14.5	74	-0.09	4.52
23 I	Naphthalene-d8	1.000	1.000	0.0	99	-0.04	5.23
24 S	Nitrobenzene-d5		-----NA-----				
25 T	Nitrobenzene		-----NA-----				
26 T	Isophorone		-----NA-----				
27 C	2-Nitrophenol		-----NA-----				
28 T	2,4-Dimethylphenol		-----NA-----				
29 T	bis(2-Chloroethoxy)methan		-----NA-----				

30 T	Benzoic acid	-----Amount	Calc.	%Drift	-----
		-----NA-----			

31 C	2,4-Dichlorophenol	-----AvgRF	CCRF	%Dev	-----
32 M	1,2,4-Trichlorobenzene		-----NA-----		
33 T	Naphthalene		-----NA-----		
34 T	2,6-Dichlorophenol		-----NA-----		
35 T	4-Chloroaniline		-----NA-----		
36 C	Hexachlorobutadiene		-----NA-----		

# Continuing Calibration Summary

Page 2 of 3

Job Number: JB38251

Sample: MSW598-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12999.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol		-----NA-----					
38 T	2-Methylnaphthalene		-----NA-----					
39 T	1-Methylnaphthalene		-----NA-----					
40 T	1,2,4,5-Tetrachlorobenzene		-----NA-----					
41 I	Naphthalene-d8a	1.000	1.000	0.0	76	-0.10	5.23	
42	Caprolactam	0.144	0.100	30.6#	53	-0.09	5.59	
43 I	Acenaphthene-d10	1.000	1.000	0.0	97	-0.05	6.76	
44 T	Pentachloronitrobenzene		-----NA-----					
45 P	Hexachlorocyclopentadiene		-----NA-----					
46 C	2,4,6-Trichlorophenol		-----NA-----					
47 T	2,4,5-Trichlorophenol		-----NA-----					
48 S	2-Fluorobiphenyl		-----NA-----					
49 T	2-Chloronaphthalene		-----NA-----					
50 M	Acenaphthylene		-----NA-----					
51 T	Dimethylphthalate		-----NA-----					
52 T	2,4-Dinitrotoluene		-----NA-----					
53 C	Acenaphthene		-----NA-----					
54 P	2,4-Dinitrophenol		-----NA-----					
55 T	Dibenzofuran		-----NA-----					
56 M	2,6-Dinitrotoluene		-----NA-----					
57 P	4-Nitrophenol		-----NA-----					
58 T	2,3,4,6-Tetrachlorophenol		-----NA-----					
59 T	Fluorene		-----NA-----					
60 T	4-Chlorophenyl-phenylethane		-----NA-----					
61 T	Diethylphthalate		-----NA-----					
62 T	2-nitroaniline		-----NA-----					
63 T	3-nitroaniline		-----NA-----					
64 T	4-nitroaniline		-----NA-----					
65	Acenaphthene-d10a	1.000	1.000	0.0	80	-0.10	6.76	
66	1,1'-Biphenyl	1.400	1.348	3.7	76	-0.09	6.25	
67 I	Phenanthrene-d10	1.000	1.000	0.0	92	-0.06	8.17	
68 T	4,6-Dinitro-2-methylphenol		-----NA-----					
69 C	n-Nitrosodiphenylamine		-----NA-----					
70 T	1,2-Diphenylhydrazine		-----NA-----					
71 S	2,4,6-Tribromophenol		-----NA-----					
72 T	4-Bromophenyl-phenylether		-----NA-----					
73 T	Hexachlorobenzene		-----NA-----					
74 C	Pentachlorophenol		-----NA-----					
75 T	Phenanthrene		-----NA-----					
76 T	Anthracene		-----NA-----					
77 T	Carbazole		-----NA-----					
78 T	Di-n-butylphthalate		-----NA-----					
79 C	Fluoranthene		-----NA-----					
80 I	Phenanthrene-d10a	1.000	1.000	0.0	84	-0.09	8.17	
81	Atrazine	0.217	0.198	8.8	75	-0.09	7.92	
82 I	Chrysene-d12	1.000	1.000	0.0	94	-0.06	11.15	
83 T	Benzidine		-----NA-----					
84 M	Pyrene		-----NA-----					
85 S	Terphenyl-d14		-----NA-----					
86	3,3-Dimethylbenzidine		-----NA-----					
87 T	Butylbenzylphthalate		-----NA-----					
88 T	3,3'-Dichlorobenzidine		-----NA-----					
89 T	Benzo[a]anthracene		-----NA-----					
90 T	Chrysene		-----NA-----					

9.7.5  
9

**Continuing Calibration Summary**

Job Number: JB38251

Sample: MSW598-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W12999.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat	-----NA-----
92 I	Perylene-d12	1.000 1.000 0.0 95 -0.06 12.74
93 C	Di-n-octylphthalate	-----NA-----
94 T	Benzo[b]fluoranthene	-----NA-----
95 T	Benzo[k]fluoranthene	-----NA-----
96 C	Benzo[a]pyrene	-----NA-----
97 T	Indeno[1,2,3-cd]pyrene	-----NA-----
98 T	Dibenz[a,h]anthracene	-----NA-----
99 T	Benzo[g,h,i]perylene	-----NA-----

---

(#) = Out of Range  
w12584.D W130530\_8270+.m

SPCC's out = 4 CCC's out = 13  
Tue Jun 11 08:18:32 2013

9.7.5

9

## Continuing Calibration Summary

Job Number: JB38251

Sample: MSW598-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W13000.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130611\w13000.D Vial: 100  
 Acq On : 11 Jun 2013 8:22 am Operator: kristinr  
 Sample : cc579-50 Inst : MSW  
 Misc : op33474,msw598,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu Jun 06 09:42:09 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)R.T.
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	82	-0.04
2	N-nitrosodimethylamine	0.628	0.538	14.3	69	-0.03
3 T	Pyridine	1.179	0.993	15.8	70	-0.03
4 T	Aniline	0.559	0.535	4.3	81	-0.04
5 S	2-Fluorophenol	1.083	1.023	5.5	78	-0.02
6 T	bis(2-Chloroethyl)ether	0.675	0.565	16.3	69	-0.04
7 S	Phenol-d5	1.320	1.257	4.8	78	-0.03
8 C	Phenol	1.408	1.378	2.1	78	-0.02
9 M	2-Chlorophenol	1.289	1.239	3.9	78	-0.03
10 T	1,3-Dichlorobenzene	1.484	1.431	3.6	80	-0.04
11 C	1,4-Dichlorobenzene	1.568	1.519	3.1	79	-0.04
12 T	1,2-Dichlorobenzene	1.431	1.379	3.6	78	-0.04
13 T	Benzyl alcohol	0.798	0.518	35.1#	52	-0.03
14 T	bis(2-chloroisopropyl)eth	0.887	0.709	20.1#	66	-0.04
15 T	o-cresol	1.091	1.008	7.6	74	-0.03
16 T	Acetophenone	1.718	1.507	12.3	74	-0.04
17 T	Hexachloroethane	0.493	0.453	8.1	75	-0.04
18 P	N-Nitroso-di-n-propylamin	0.721	0.623	13.6	68	-0.04
19 T	m+p-cresols	1.179	1.094	7.2	76	-0.03
20	4-methylphenol	1.179	1.094	7.2	76	-0.03
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	61	-0.10
22	Benzaldehyde			-----NA-----		
23 I	Naphthalene-d8	1.000	1.000	0.0	77	-0.04
24 S	Nitrobenzene-d5	0.295	0.284	3.7	74	-0.04
25 T	Nitrobenzene	0.304	0.290	4.6	72	-0.04
26 T	Isophorone	0.565	0.503	11.0	69	-0.04
27 C	2-Nitrophenol	0.196	0.204	-4.1	77	-0.04
28 T	2,4-Dimethylphenol	0.332	0.312	6.0	73	-0.03
29 T	bis(2-Chloroethoxy)methan	0.356	0.320	10.1	71	-0.04
30 T	Benzoic acid	80.000	74.958	6.3	71	-0.02
31 C	2,4-Dichlorophenol	0.345	0.340	1.4	76	-0.03
32 M	1,2,4-Trichlorobenzene	0.383	0.366	4.4	74	-0.04
33 T	Naphthalene	1.033	0.994	3.8	75	-0.05
34 T	2,6-Dichlorophenol	0.342	0.328	4.1	74	-0.04
35 T	4-Chloroaniline	0.439	0.421	4.1	74	-0.04
36 C	Hexachlorobutadiene	0.249	0.240	3.6	75	-0.04

9.7.6

9

## Continuing Calibration Summary

Job Number: JB38251

Sample: MSW598-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W13000.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol	0.295	0.280	5.1	73	-0.03	5.72
38 T	2-Methylnaphthalene	0.768	0.747	2.7	76	-0.04	5.84
39 T	1-Methylnaphthalene	0.737	0.696	5.6	75	-0.04	5.93
40 T	1,2,4,5-Tetrachlorobenzene	0.475	0.443	6.7	74	-0.05	6.02
41 I	Naphthalene-d8a	1.000	1.000	0.0	64	-0.10	5.23
42	Caprolactam			-----NA-----			
43 I	Acenaphthene-d10	1.000	1.000	0.0	75	-0.05	6.76
44 T	Pentachloronitrobenzene	0.185	0.172	7.0	71	-0.05	8.13
45 P	Hexachlorocyclopentadiene	0.411	0.431	-4.9	73	-0.05	6.03
46 C	2,4,6-Trichlorophenol	0.436	0.412	5.5	71	-0.04	6.11
47 T	2,4,5-Trichlorophenol	0.464	0.457	1.5	73	-0.03	6.15
48 S	2-Fluorobiphenyl	1.373	1.365	0.6	77	-0.05	6.17
49 T	2-Chloronaphthalene	1.097	1.079	1.6	75	-0.05	6.26
50 M	Acenaphthylene	1.794	1.758	2.0	74	-0.04	6.63
51 T	Dimethylphthalate	1.348	1.281	5.0	72	-0.04	6.56
52 T	2,4-Dinitrotoluene	0.394	0.403	-2.3	75	-0.04	6.97
53 C	Acenaphthene	1.113	1.081	2.9	74	-0.05	6.80
54 P	2,4-Dinitrophenol	0.230	0.235	-2.2	74	-0.04	6.83
55 T	Dibenzofuran	1.720	1.686	2.0	75	-0.05	6.94
56 M	2,6-Dinitrotoluene	0.299	0.310	-3.7	75	-0.05	6.62
57 P	4-Nitrophenol	0.183	0.164	10.4	67	-0.02	6.90
58 T	2,3,4,6-Tetrachlorophenol	0.463	0.449	3.0	73	-0.05	7.09
59 T	Fluorene	1.357	1.312	3.3	74	-0.05	7.26
60 T	4-Chlorophenyl-phenylethane	0.766	0.724	5.5	72	-0.05	7.25
61 T	Diethylphthalate	1.221	1.149	5.9	71	-0.05	7.20
62 T	2-nitroaniline	0.331	0.362	-9.4	79	-0.04	6.38
63 T	3-nitroaniline	0.294	0.304	-3.4	77	-0.04	6.74
64 T	4-nitroaniline	0.295	0.311	-5.4	78	-0.04	7.32
65	Acenaphthene-d10a	1.000	1.000	0.0	57	-0.10	6.76
66	1,1'-Biphenyl			-----NA-----			
67 I	Phenanthrene-d10	1.000	1.000	0.0	74	-0.06	8.17
68 T	4,6-Dinitro-2-methylphenol	0.159	0.167	-5.0	74	-0.04	7.35
69 C	n-Nitrosodiphenylamine	0.524	0.514	1.9	73	-0.05	7.37
70 T	1,2-Diphenylhydrazine	0.481	0.425	11.6	67	-0.05	7.40
71 S	2,4,6-Tribromophenol	0.161	0.173	-7.5	78	-0.05	7.50
72 T	4-Bromophenyl-phenylether	0.275	0.280	-1.8	75	-0.05	7.72
73 T	Hexachlorobenzene	0.301	0.313	-4.0	76	-0.06	7.87
74 C	Pentachlorophenol	0.218	0.201	7.8	67	-0.05	8.05
75 T	Phenanthrene	1.083	1.053	2.8	73	-0.05	8.20
76 T	Anthracene	1.131	1.100	2.7	74	-0.05	8.24
77 T	Carbazole	0.969	0.964	0.5	75	-0.05	8.42
78 T	Di-n-butylphthalate	1.095	1.062	3.0	71	-0.06	8.84
79 C	Fluoranthene	1.267	1.255	0.9	75	-0.06	9.48
80 I	Phenanthrene-d10a	1.000	1.000	0.0	62	-0.09	8.17
81	Atrazine			-----NA-----			
82 I	Chrysene-d12	1.000	1.000	0.0	79	-0.06	11.15
83 T	Benzidine	0.264	0.358	-35.6#	99	-0.06	9.63
84 M	Pyrene	1.061	1.012	4.6	75	-0.06	9.73
85 S	Terphenyl-d14	0.922	0.886	3.9	77	-0.06	9.92
86	3,3-Dimethylbenzidine	0.394	0.472	-19.8	85	-0.06	10.49
87 T	Butylbenzylphthalate	0.319	0.354	-11.0	80	-0.06	10.54
88 T	3,3'-Dichlorobenzidine	0.406	0.443	-9.1	79	-0.06	11.12
89 T	Benzo[a]anthracene	1.057	1.015	4.0	77	-0.06	11.12
90 T	Chrysene	1.033	0.970	6.1	75	-0.06	11.18

**Continuing Calibration Summary**

Job Number: JB38251

Sample: MSW598-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W13000.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat	0.489	0.524	-7.2	76	-0.06	11.26
92 I	Perylene-d12	1.000	1.000	0.0	83	-0.06	12.73
93 C	Di-n-octylphthalate	0.753	0.841	-11.7	83	-0.06	11.95
94 T	Benzo[b]fluoranthene	1.199	1.194	0.4	76	-0.06	12.35
95 T	Benzo[k]fluoranthene	1.183	1.060	10.4	83	-0.06	12.37
96 C	Benzo[a]pyrene	1.059	1.036	2.2	78	-0.06	12.68
97 T	Indeno[1,2,3-cd]pyrene	1.364	1.384	-1.5	80	-0.08	13.91
98 T	Dibenz[a,h]anthracene	1.126	1.144	-1.6	80	-0.08	13.92
99 T	Benzo[g,h,i]perylene	1.139	1.134	0.4	79	-0.08	14.23

(#) = Out of Range  
w12585.D W130530\_8270+.m

SPCC's out = 0 CCC's out = 0  
Mon Jun 17 14:31:13 2013

9.7.6

9

## Continuing Calibration Summary

Job Number: JB38251

Sample: MSW599-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W13021.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\2\DATA\W130611\w13021.D Vial: 46  
 Acq On : 11 Jun 2013 6:41 pm Operator: kristinr  
 Sample : cc579-50 Inst : MSW  
 Misc : op33474,msw599,,,1,1 Multiplr: 1.00  
 MS Integration Params: RTEINT.P

Method : C:\msdchem\1\met...\\W130530\_8270+.m (RTE Integrator)  
 Title : SW-864 Method 8270  
 Last Update : Thu Jun 06 09:42:09 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.050 Min. Rel. Area : 50% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 20% Max. Rel. Area : 200%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	R.T.	
1 I	1,4-Dichlorobenzene-d4	1.000	1.000	0.0	90	-0.07	4.15	
2	N-nitrosodimethylamine	0.628	0.541	13.9	76	-0.05	2.29	
3 T	Pyridine	1.179	1.009	14.4	78	-0.05	2.30	
4 T	Aniline	0.559	0.471	15.7	78	-0.06	3.92	
5 S	2-Fluorophenol	1.083	1.023	5.5	86	-0.04	3.21	
6 T	bis(2-Chloroethyl)ether	0.675	0.571	15.4	76	-0.06	3.96	
7 S	Phenol-d5	1.320	1.255	4.9	86	-0.05	3.90	
8 C	Phenol	1.408	1.374	2.4	86	-0.05	3.91	
9 M	2-Chlorophenol	1.289	1.215	5.7	84	-0.06	4.01	
10 T	1,3-Dichlorobenzene	1.484	1.424	4.0	87	-0.07	4.12	
11 C	1,4-Dichlorobenzene	1.568	1.492	4.8	86	-0.06	4.16	
12 T	1,2-Dichlorobenzene	1.431	1.375	3.9	86	-0.07	4.31	
13 T	Benzyl alcohol	0.798	0.550	31.1#	61	-0.06	4.28	
14 T	bis(2-chloroisopropyl)eth	0.887	0.720	18.8	74	-0.07	4.39	
15 T	o-cresol	1.091	1.096	-0.5	89	-0.06	4.38	
16 T	Acetophenone	1.718	1.499	12.7	81	-0.06	4.49	
17 T	Hexachloroethane	0.493	0.450	8.7	82	-0.07	4.56	
18 P	N-Nitroso-di-n-propylamin	0.721	0.617	14.4	74	-0.06	4.52	
19 T	m+p-cresols	1.179	1.099	6.8	84	-0.05	4.50	
20	4-methylphenol	1.179	1.099	6.8	84	-0.05	4.50	
21 I	1,4-Dichlorobenzene-d4A	1.000	1.000	0.0	67	-0.12	4.15	
22	Benzaldehyde			-----NA-----				
23 I	Naphthalene-d8	1.000	1.000	0.0	84	-0.07	5.20	
24 S	Nitrobenzene-d5	0.295	0.286	3.1	81	-0.06	4.62	
25 T	Nitrobenzene	0.304	0.289	4.9	79	-0.06	4.64	
26 T	Isophorone	0.565	0.511	9.6	77	-0.07	4.83	
27 C	2-Nitrophenol	0.196	0.206	-5.1	85	-0.07	4.90	
28 T	2,4-Dimethylphenol	0.332	0.322	3.0	82	-0.06	4.93	
29 T	bis(2-Chloroethoxy)methan	0.356	0.327	8.1	79	-0.07	5.01	
30 T	Benzoic acid	80.000	77.259	3.4	80	-0.05	5.05	
31 C	2,4-Dichlorophenol	0.345	0.341	1.2	83	-0.06	5.10	
32 M	1,2,4-Trichlorobenzene	0.383	0.374	2.3	83	-0.06	5.17	
33 T	Naphthalene	1.033	0.997	3.5	83	-0.07	5.23	
34 T	2,6-Dichlorophenol	0.342	0.331	3.2	81	-0.06	5.30	
35 T	4-Chloroaniline	0.439	0.425	3.2	81	-0.07	5.29	
36 C	Hexachlorobutadiene	0.249	0.238	4.4	82	-0.07	5.38	

## Continuing Calibration Summary

Job Number: JB38251

Sample: MSW599-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W13021.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

37 C	4-Chloro-3-methylphenol	0.295	0.285	3.4	81	-0.06	5.70
38 T	2-Methylnaphthalene	0.768	0.764	0.5	85	-0.07	5.81
39 T	1-Methylnaphthalene	0.737	0.705	4.3	83	-0.07	5.91
40 T	1,2,4,5-Tetrachlorobenzene	0.475	0.448	5.7	82	-0.07	6.00
41 I	Naphthalene-d8a	1.000	1.000	0.0	70	-0.12	5.20
42	Caprolactam			-----NA-----			
43 I	Acenaphthene-d10	1.000	1.000	0.0	83	-0.07	6.74
44 T	Pentachloronitrobenzene	0.185	0.173	6.5	79	-0.08	8.10
45 P	Hexachlorocyclopentadiene	0.411	0.418	-1.7	78	-0.07	6.01
46 C	2,4,6-Trichlorophenol	0.436	0.418	4.1	80	-0.06	6.09
47 T	2,4,5-Trichlorophenol	0.464	0.460	0.9	81	-0.06	6.12
48 S	2-Fluorobiphenyl	1.373	1.356	1.2	85	-0.07	6.15
49 T	2-Chloronaphthalene	1.097	1.077	1.8	82	-0.07	6.24
50 M	Acenaphthylene	1.794	1.765	1.6	82	-0.07	6.60
51 T	Dimethylphthalate	1.348	1.297	3.8	81	-0.06	6.54
52 T	2,4-Dinitrotoluene	0.394	0.400	-1.5	83	-0.07	6.95
53 C	Acenaphthene	1.113	1.096	1.5	83	-0.07	6.77
54 P	2,4-Dinitrophenol	0.230	0.235	-2.2	81	-0.06	6.81
55 T	Dibenzofuran	1.720	1.680	2.3	82	-0.07	6.91
56 M	2,6-Dinitrotoluene	0.299	0.315	-5.4	84	-0.07	6.60
57 P	4-Nitrophenol	0.183	0.158	13.7	72	-0.05	6.88
58 T	2,3,4,6-Tetrachlorophenol	0.463	0.451	2.6	81	-0.07	7.07
59 T	Fluorene	1.357	1.319	2.8	82	-0.08	7.23
60 T	4-Chlorophenyl-phenylethane	0.766	0.724	5.5	79	-0.08	7.22
61 T	Diethylphthalate	1.221	1.137	6.9	78	-0.07	7.18
62 T	2-nitroaniline	0.331	0.365	-10.3	88	-0.07	6.35
63 T	3-nitroaniline	0.294	0.304	-3.4	85	-0.07	6.72
64 T	4-nitroaniline	0.295	0.310	-5.1	86	-0.07	7.29
65	Acenaphthene-d10a	1.000	1.000	0.0	63	-0.12	6.74
66	1,1'-Biphenyl			-----NA-----			
67 I	Phenanthrene-d10	1.000	1.000	0.0	82	-0.08	8.14
68 T	4,6-Dinitro-2-methylphenol	0.159	0.166	-4.4	82	-0.07	7.33
69 C	n-Nitrosodiphenylamine	0.524	0.519	1.0	82	-0.07	7.35
70 T	1,2-Diphenylhydrazine	0.481	0.425	11.6	75	-0.07	7.38
71 S	2,4,6-Tribromophenol	0.161	0.171	-6.2	86	-0.07	7.48
72 T	4-Bromophenyl-phenylether	0.275	0.279	-1.5	83	-0.08	7.69
73 T	Hexachlorobenzene	0.301	0.311	-3.3	84	-0.08	7.84
74 C	Pentachlorophenol	0.218	0.202	7.3	75	-0.08	8.02
75 T	Phenanthrene	1.083	1.050	3.0	81	-0.08	8.17
76 T	Anthracene	1.131	1.089	3.7	81	-0.08	8.22
77 T	Carbazole	0.969	0.962	0.7	83	-0.07	8.39
78 T	Di-n-butylphthalate	1.095	1.049	4.2	78	-0.08	8.82
79 C	Fluoranthene	1.267	1.237	2.4	82	-0.08	9.45
80 I	Phenanthrene-d10a	1.000	1.000	0.0	69	-0.12	8.14
81	Atrazine			-----NA-----			
82 I	Chrysene-d12	1.000	1.000	0.0	87	-0.09	11.12
83 T	Benzidine	0.264	0.329	-24.6#	100	-0.08	9.61
84 M	Pyrene	1.061	1.006	5.2	82	-0.08	9.70
85 S	Terphenyl-d14	0.922	0.895	2.9	85	-0.08	9.90
86	3,3-Dimethylbenzidine	0.394	0.446	-13.2	88	-0.08	10.47
87 T	Butylbenzylphthalate	0.319	0.352	-10.3	88	-0.08	10.52
88 T	3,3'-Dichlorobenzidine	0.406	0.443	-9.1	87	-0.08	11.10
89 T	Benzo[a]anthracene	1.057	1.000	5.4	83	-0.08	11.10
90 T	Chrysene	1.033	0.968	6.3	83	-0.08	11.15

**Continuing Calibration Summary**

Job Number: JB38251

Sample: MSW599-CC579

Account: ALNJ Accutest New Jersey

Lab FileID: W13021.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

91 T	bis(2-Ethylhexyl)phthalat	0.489	0.522	-6.7	84	-0.09	11.23
92 I	Perylene-d12	1.000	1.000	0.0	89	-0.08	12.71
93 C	Di-n-octylphthalate	0.753	0.855	-13.5	90	-0.08	11.93
94 T	Benzo[b]fluoranthene	1.199	1.162	3.1	79	-0.08	12.32
95 T	Benzo[k]fluoranthene	1.183	1.102	6.8	92	-0.08	12.35
96 C	Benzo[a]pyrene	1.059	1.044	1.4	84	-0.09	12.65
97 T	Indeno[1,2,3-cd]pyrene	1.364	1.372	-0.6	85	-0.11	13.88
98 T	Dibenz[a,h]anthracene	1.126	1.139	-1.2	86	-0.11	13.89
99 T	Benzo[g,h,i]perylene	1.139	1.131	0.7	85	-0.11	14.20

(#) = Out of Range  
w12585.D W130530\_8270+.m

SPCC's out = 0 CCC's out = 0  
Fri Jun 14 17:22:24 2013

9.7.7

9



## GC/MS Semi-volatiles

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### Raw Data

(Accutest Labs of New England, Inc.)

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## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130611\  
 Data File : w13044.D  
 Acq On : 12 Jun 2013 4:05 am  
 Operator : kristinr  
 Sample : jb38251-1  
 Misc : op33500,msw599,20.22,,,1,1  
 ALS Vial : 40 Sample Multiplier: 1

Quant Time: Jun 18 15:57:37 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

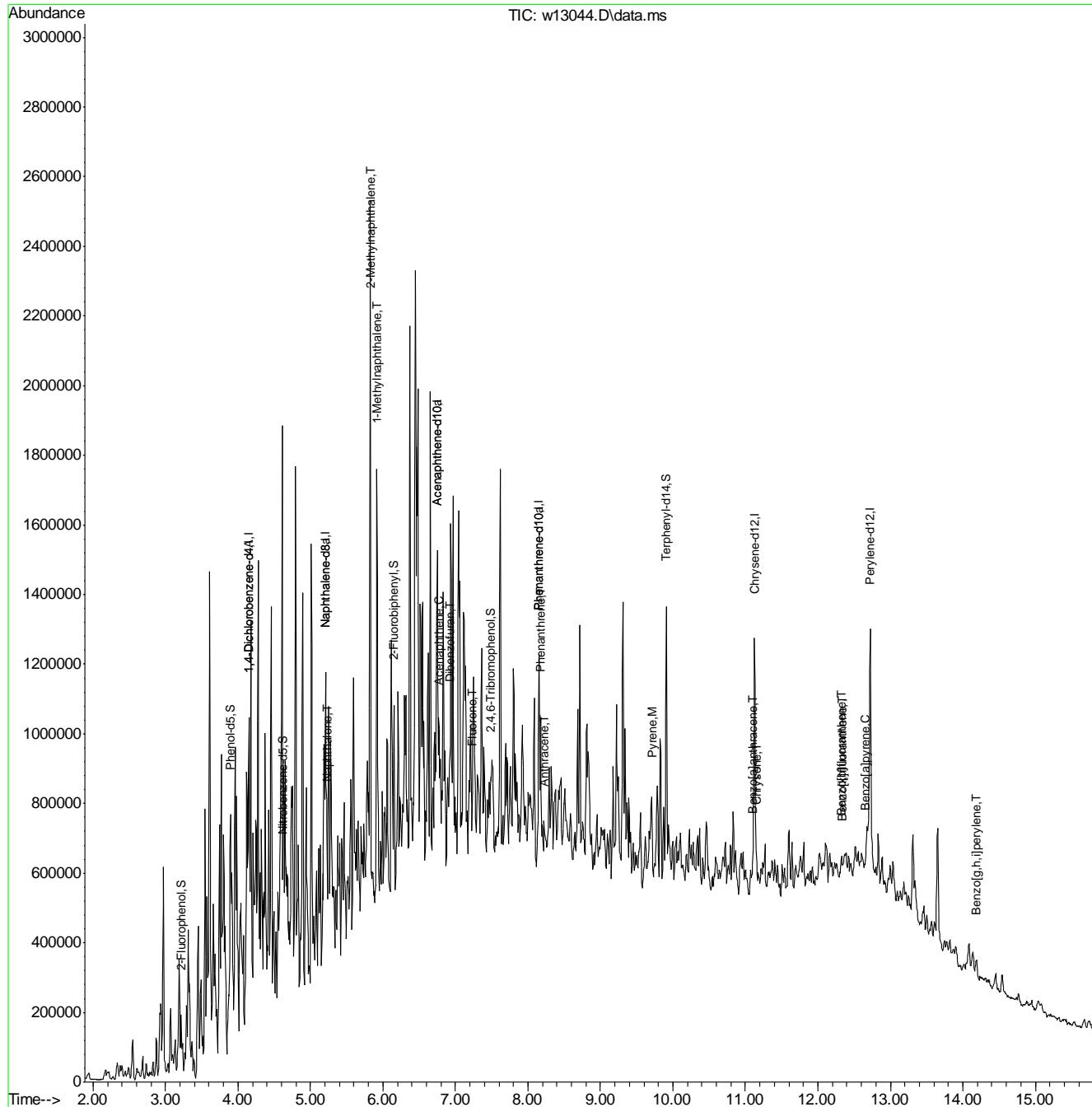
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.153	152	61307	40.00	ppm	0.04
21) 1,4-Dichlorobenzene-d4A	4.153	152	61307	40.00	PPM	0.04
23) Naphthalene-d8	5.210	136	199892	40.00	ppm	0.04
41) Naphthalene-d8a	5.210	136	199892	40.00	ppm	# 0.04
43) Acenaphthene-d10	6.749	164	135668	40.00	ppm	0.05
65) Acenaphthene-d10a	6.749	164	135507	40.00	ppm	0.05
67) Phenanthrene-d10	8.149	188	243630	40.00	ppm	0.05
80) Phenanthrene-d10a	8.149	188	243630	40.00	ppm	0.05
82) Chrysene-d12	11.124	240	316782	40.00	ppm	0.07
92) Perylene-d12	12.722	264	330423	40.00	ppm	0.08
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.212	112	45578	27.46	ppm	0.04
Spiked Amount 100.000	Range 30 - 130		Recovery = 27.46%#			
7) Phenol-d5	3.896	99	54332	26.86	ppm	0.05
Spiked Amount 100.000	Range 30 - 130		Recovery = 26.86%#			
24) Nitrobenzene-d5	4.617	82	47118	31.92	ppm	0.03
Spiked Amount 50.000	Range 30 - 130		Recovery = 63.84%			
48) 2-Fluorobiphenyl	6.151	172	142514	30.60	ppm	0.04
Spiked Amount 50.000	Range 30 - 130		Recovery = 61.20%			
71) 2,4,6-Tribromophenol	7.486	330	33061	33.65	ppm	0.06
Spiked Amount 100.000	Range 30 - 130		Recovery = 33.65%			
85) Terphenyl-d14	9.906	244	241692	33.10	ppm	0.06
Spiked Amount 50.000	Range 30 - 130		Recovery = 66.20%			
<hr/>						
Target Compounds				Qvalue		
33) Naphthalene	5.226	128	29020m	5.62	ppm	
38) 2-Methylnaphthalene	5.825	142	501229	130.58	ppm	99
39) 1-Methylnaphthalene	5.916	142	268974	73.05	ppm	100
53) Acenaphthene	6.776	153	17580m	4.66	ppm	
55) Dibenzofuran	6.920	168	21642m	3.71	ppm	
59) Fluorene	7.235	166	41215m	8.95	ppm	
75) Phenanthrene	8.175	178	171378	25.99	ppm	98
76) Anthracene	8.218	178	17912	2.60	ppm	75
84) Pyrene	9.709	202	64764	7.71	ppm	92
89) Benzo[a]anthracene	11.103	228	24530	2.93	ppm	94
90) Chrysene	11.151	228	43906	5.37	ppm	72
94) Benzo[b]fluoranthene	12.321	252	8509m	0.86	ppm	
95) Benzo[k]fluoranthene	12.337	252	2197m	0.22	ppm	
96) Benzo[a]pyrene	12.657	252	18318	2.09	ppm	83
99) Benzo[g,h,i]perylene	14.191	276	18934	2.01	ppm	89
<hr/>						

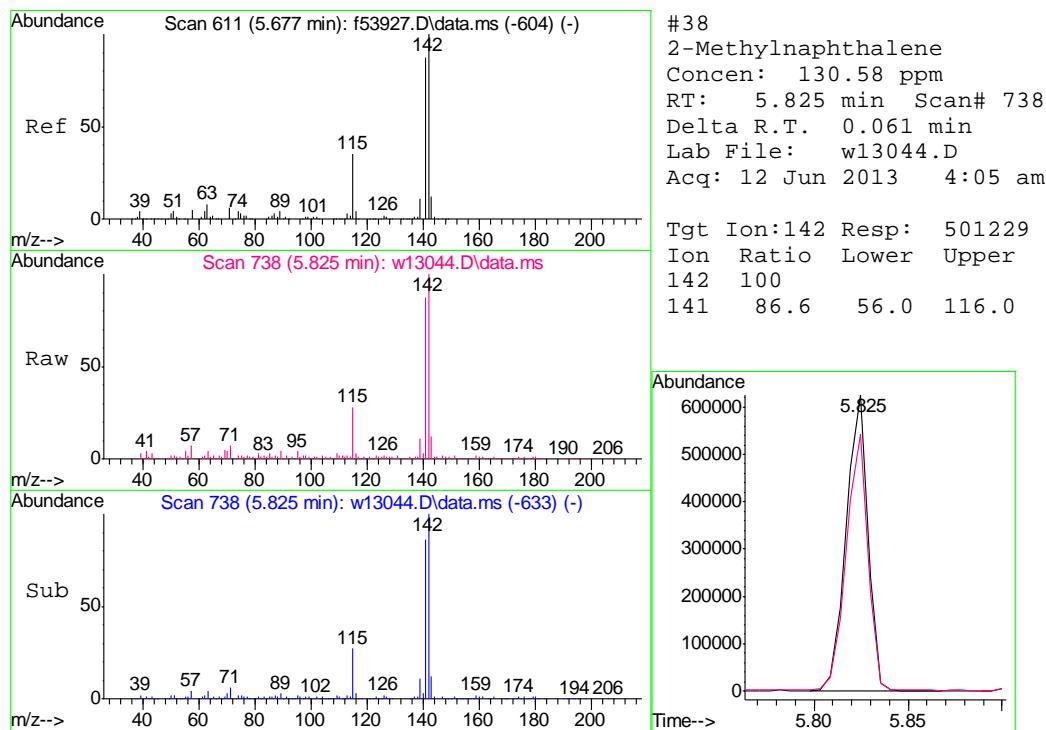
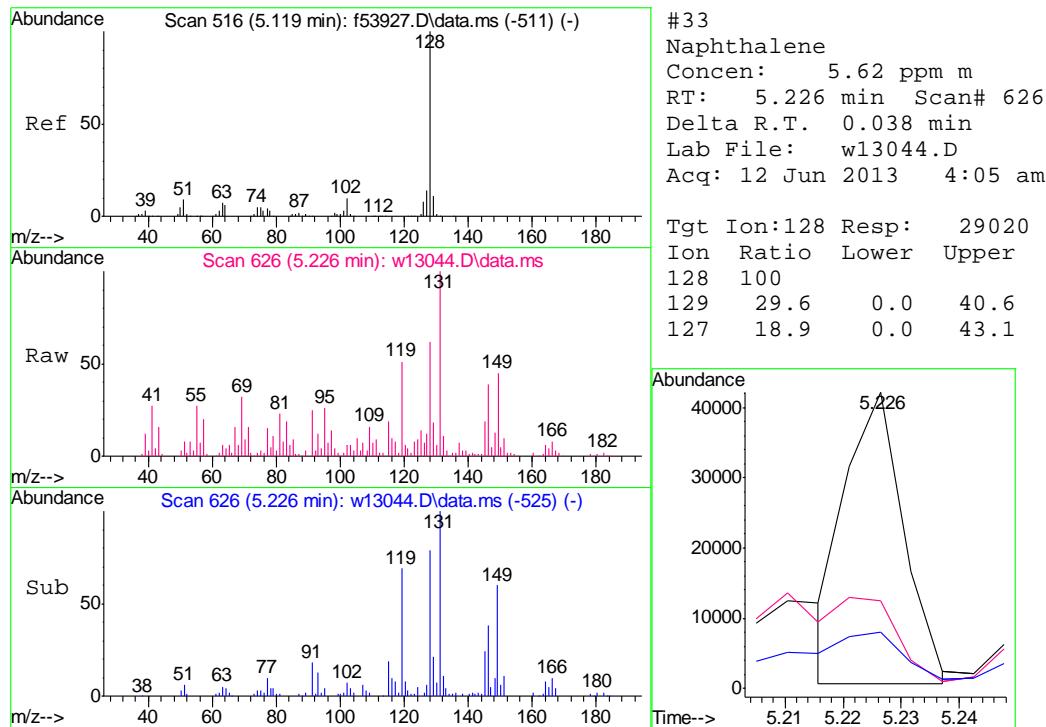
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

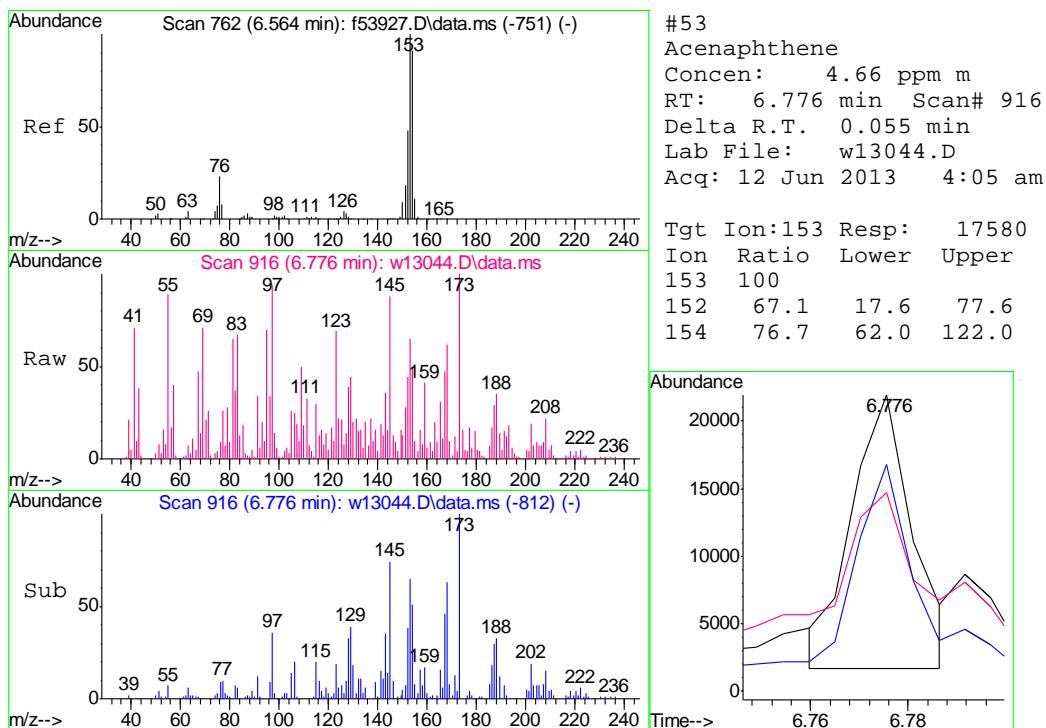
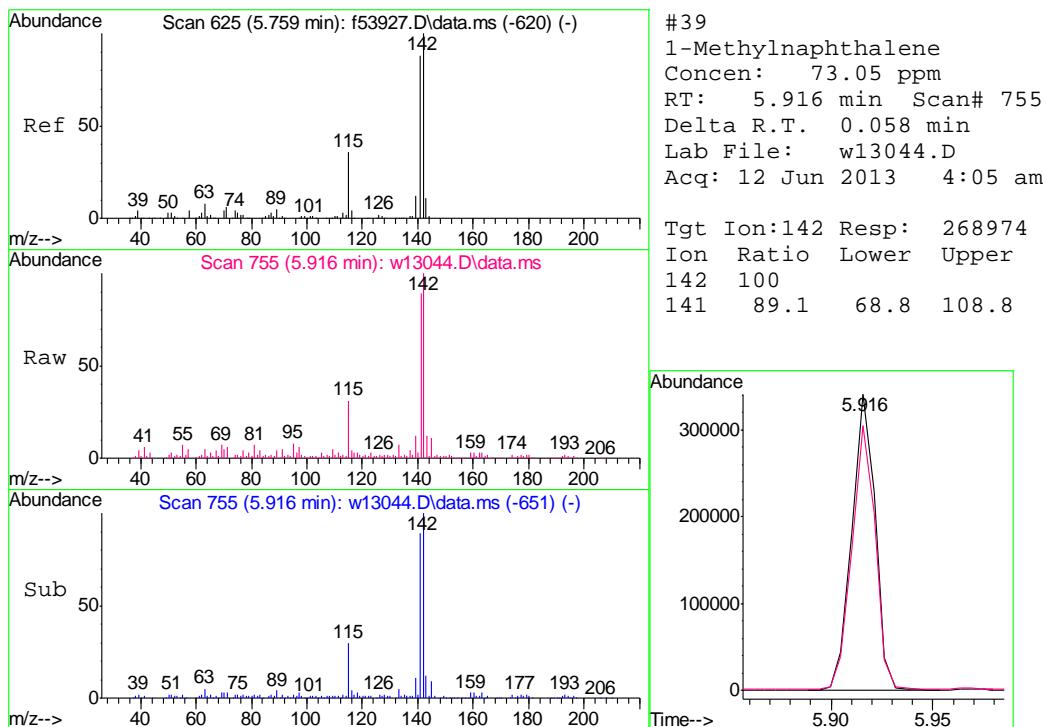
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 Data File : w13044.D  
 Acq On : 12 Jun 2013 4:05 am  
 Operator : kristinr  
 Sample : jb38251-1  
 Misc : op33500,msw599,20.22,,,1,1  
 ALS Vial : 40 Sample Multiplier: 1

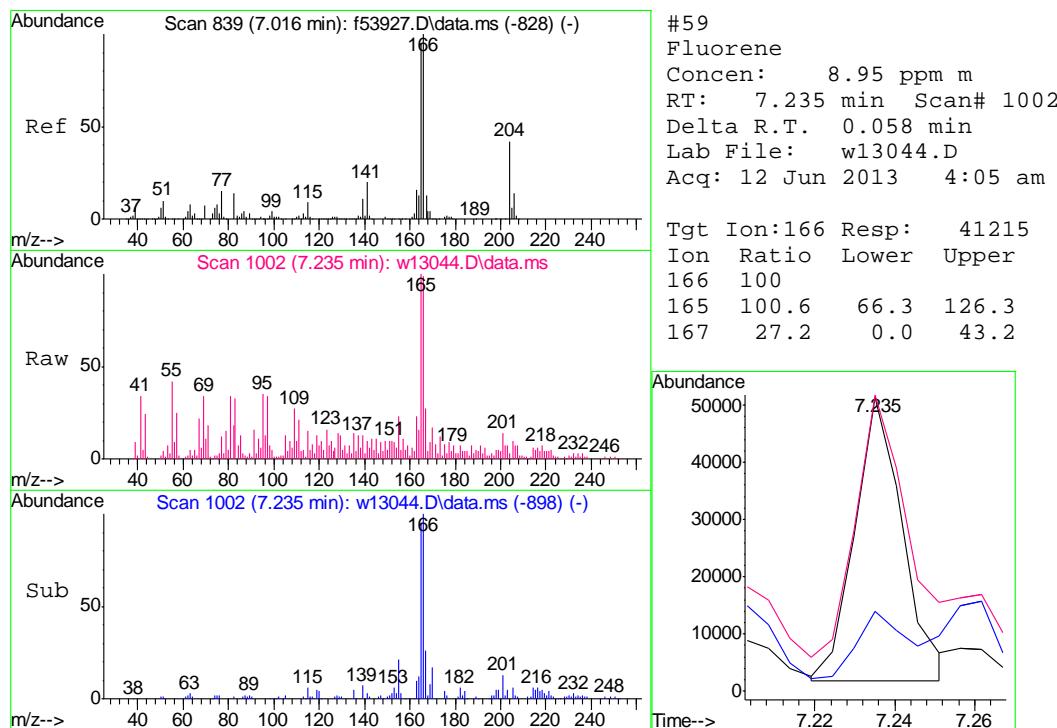
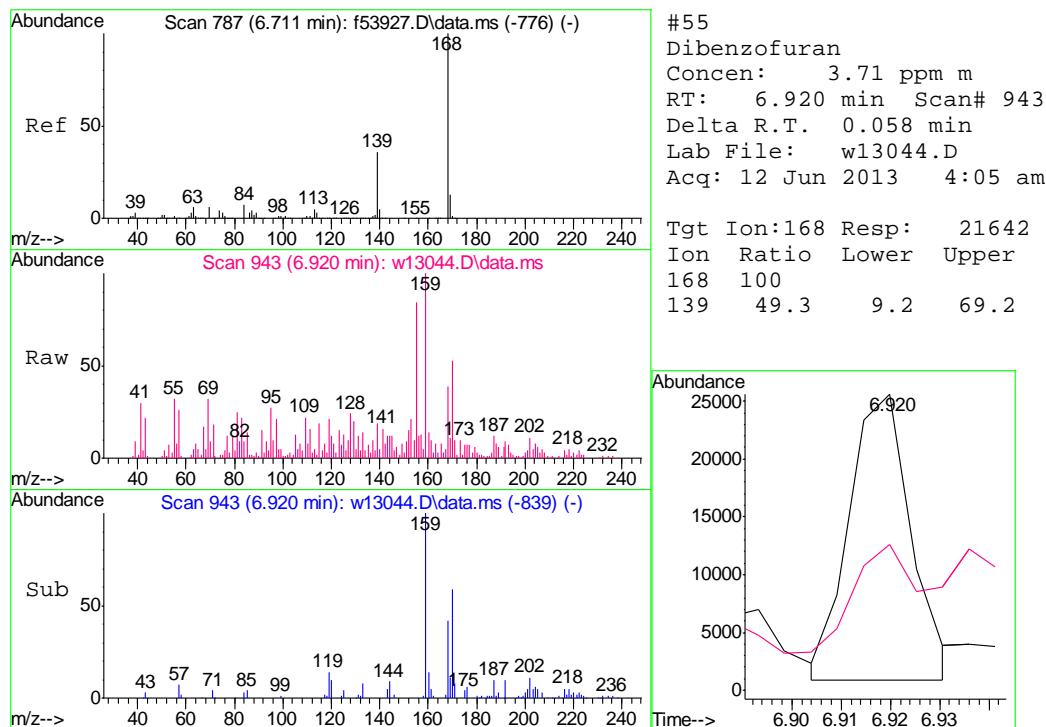
Quant Time: Jun 18 15:57:37 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

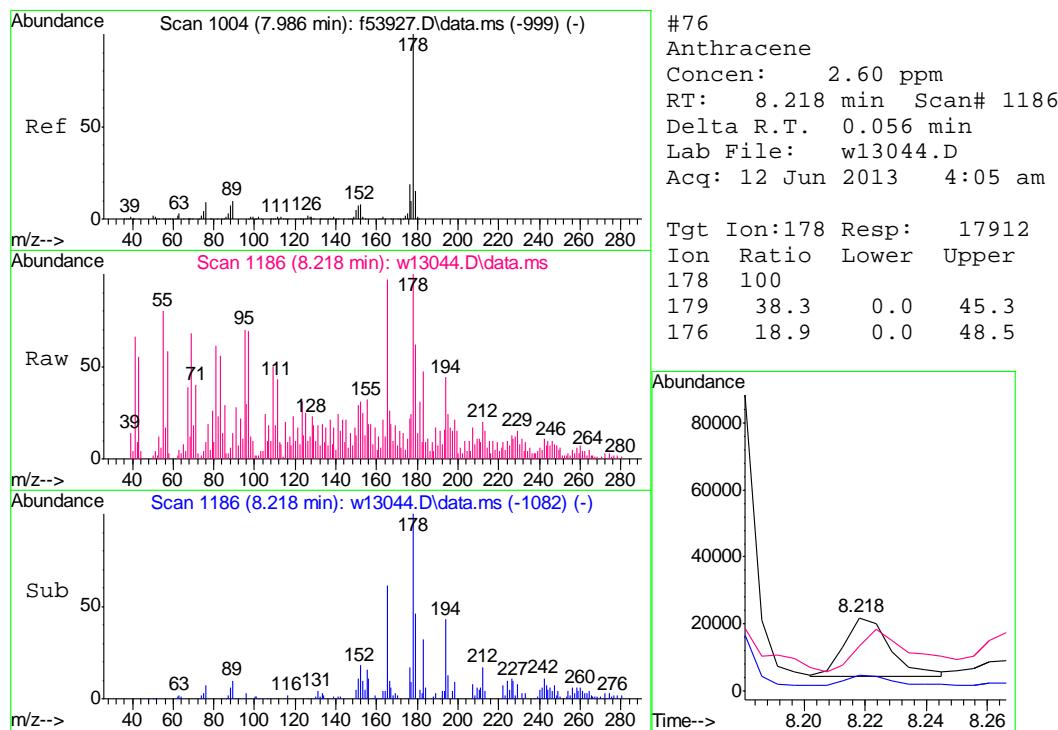
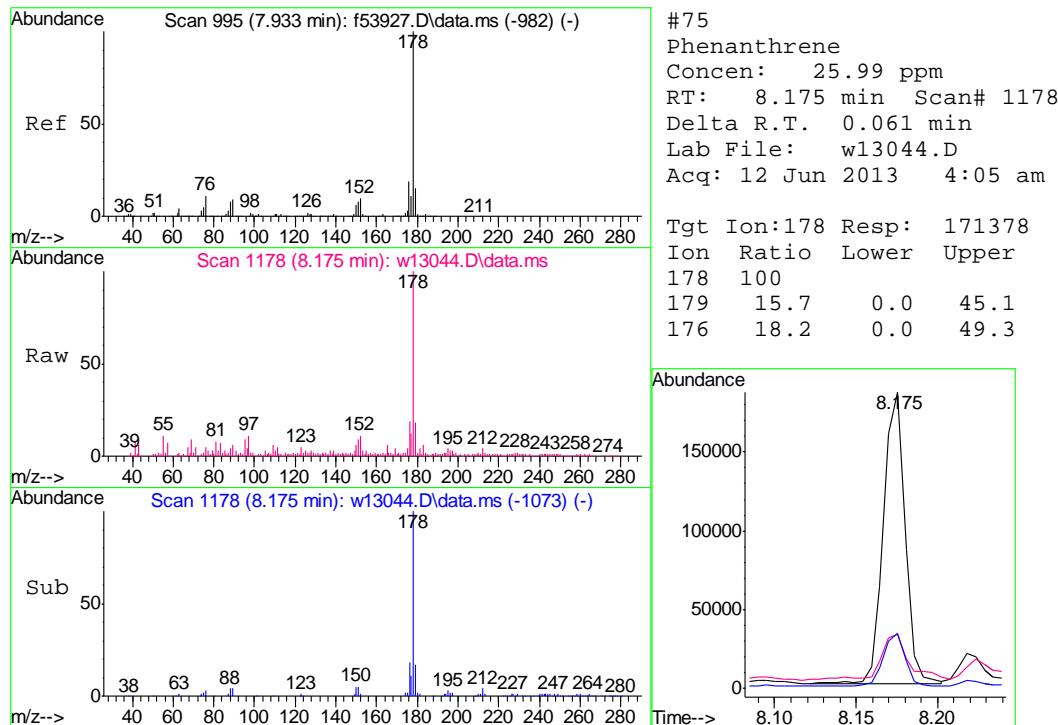


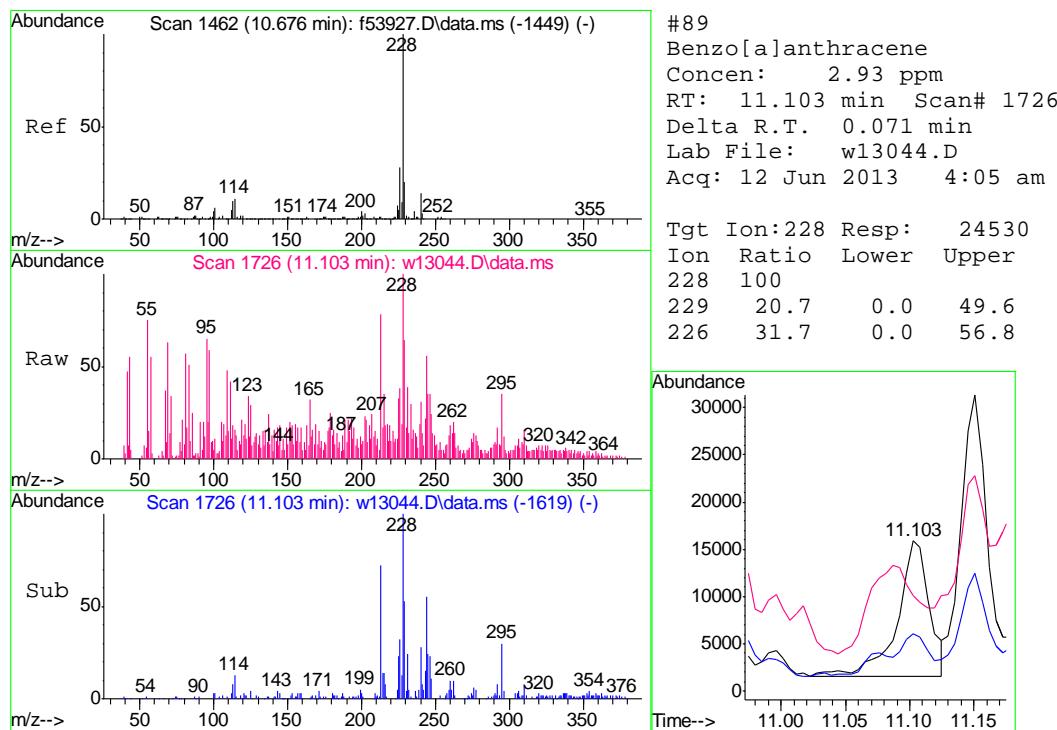
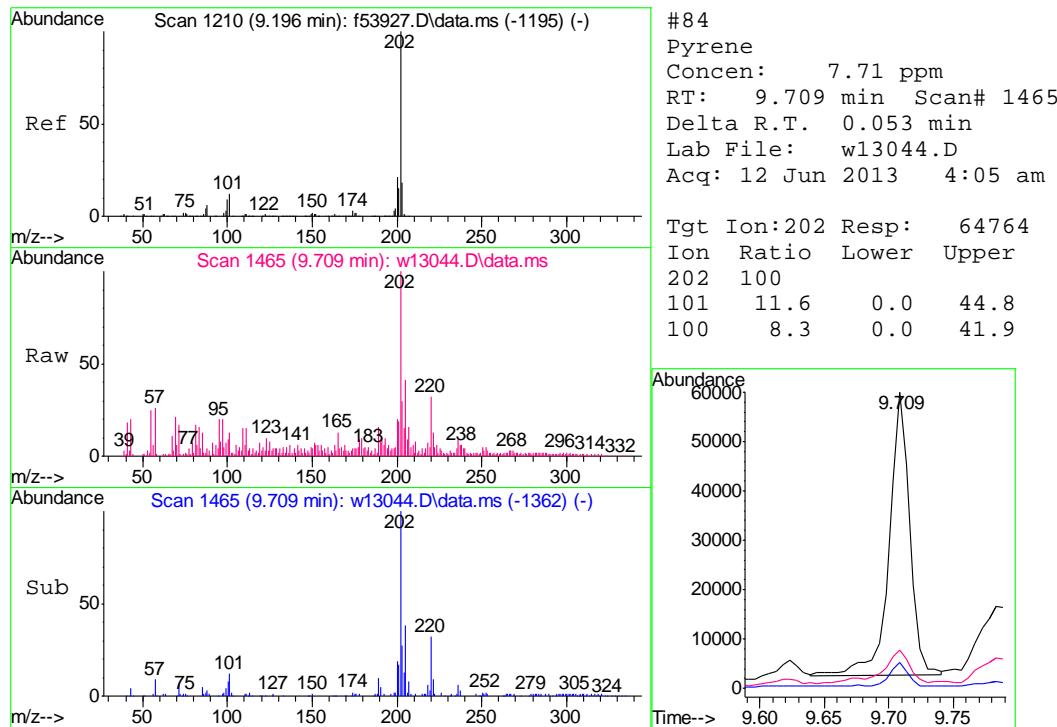


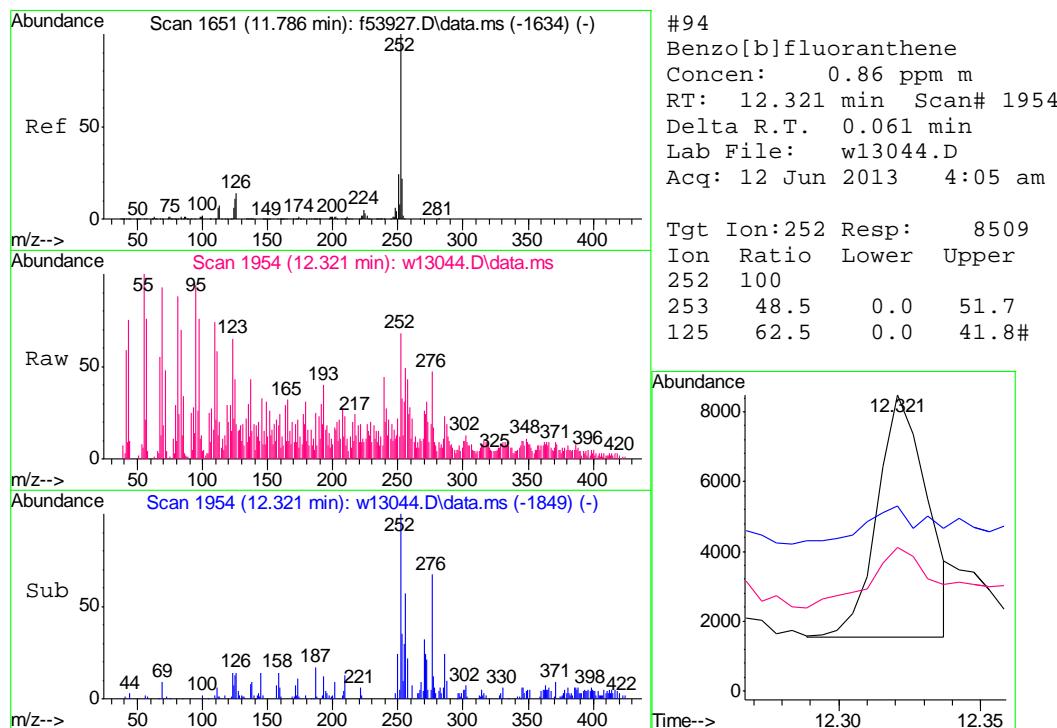
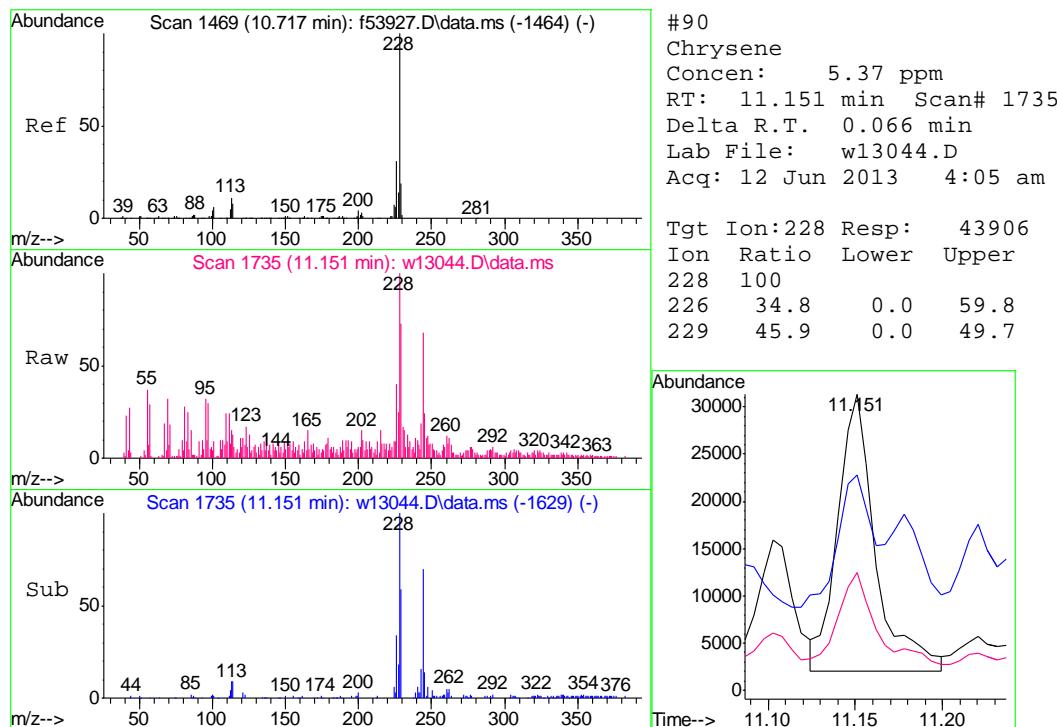
10.1.1 10

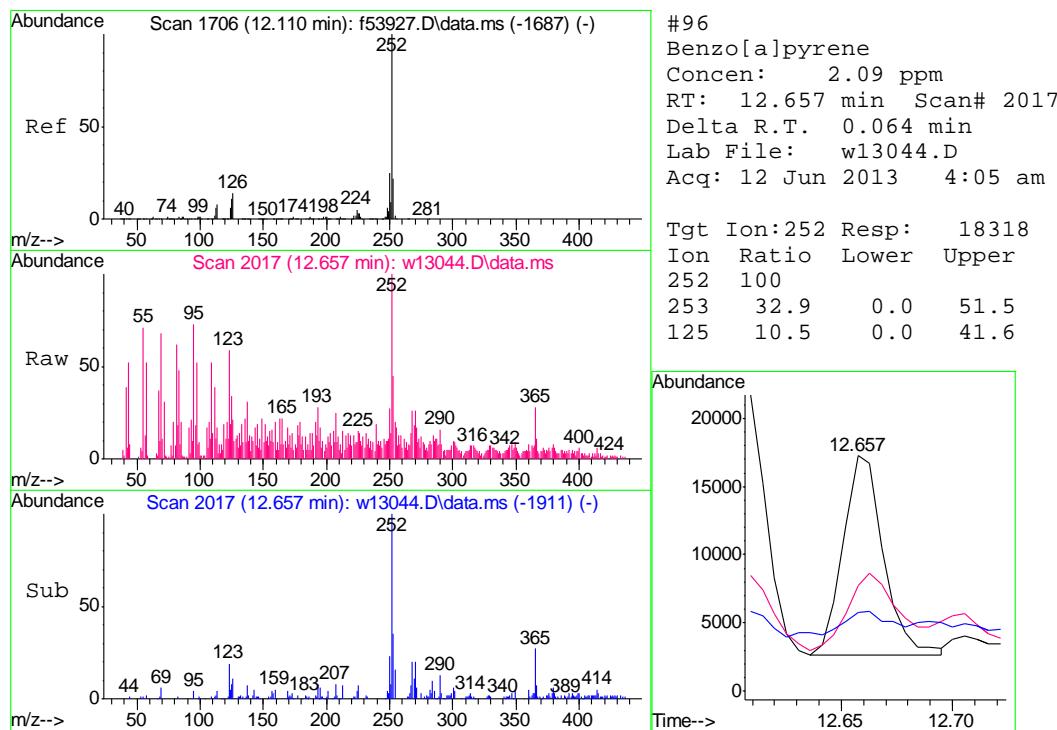
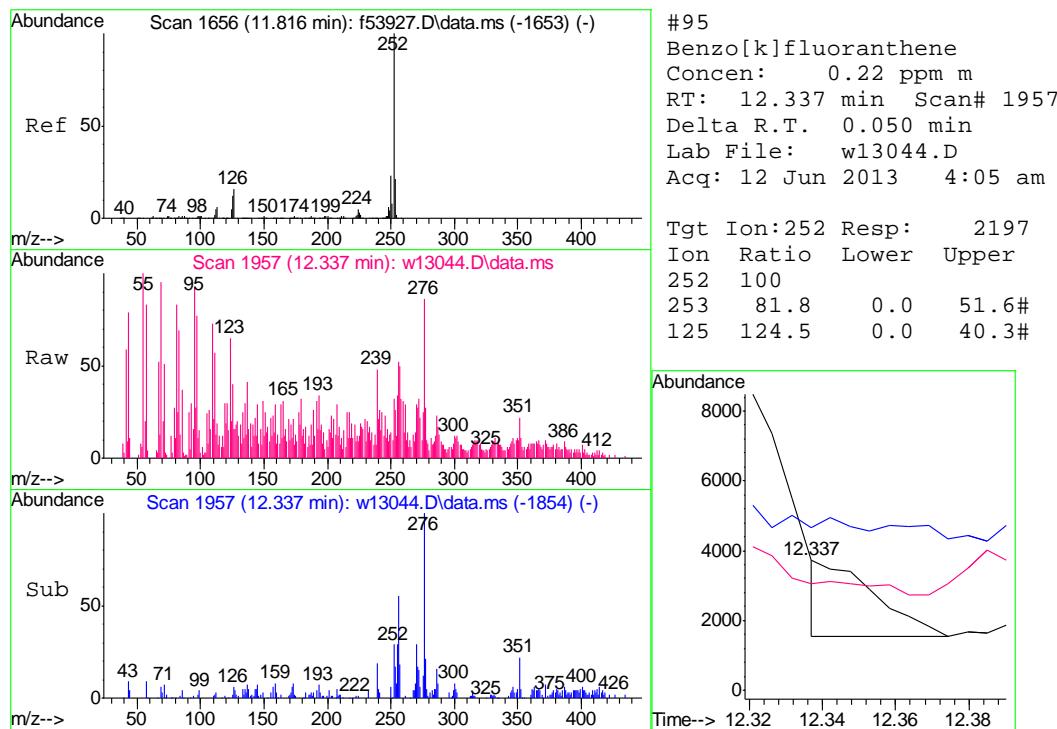


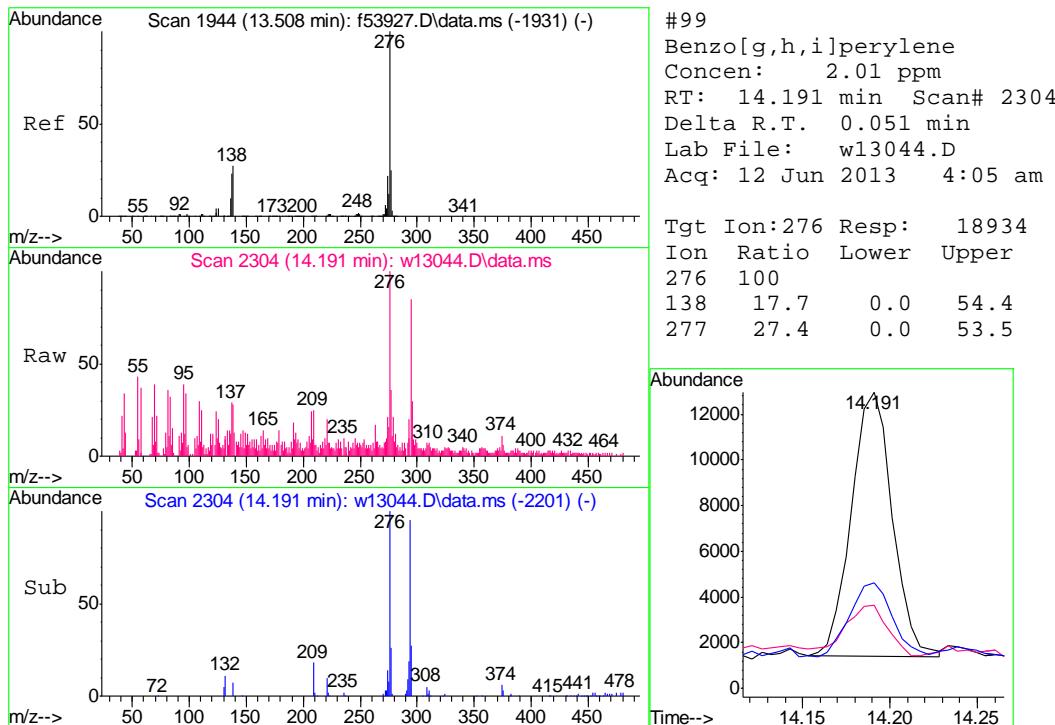












## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130611\  
 Data File : w13045.D  
 Acq On : 12 Jun 2013 4:30 am  
 Operator : kristinr  
 Sample : jb38251-2  
 Misc : op33500,msw599,20.07,,,1,1  
 ALS Vial : 41 Sample Multiplier: 1

Quant Time: Jun 18 15:58:05 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

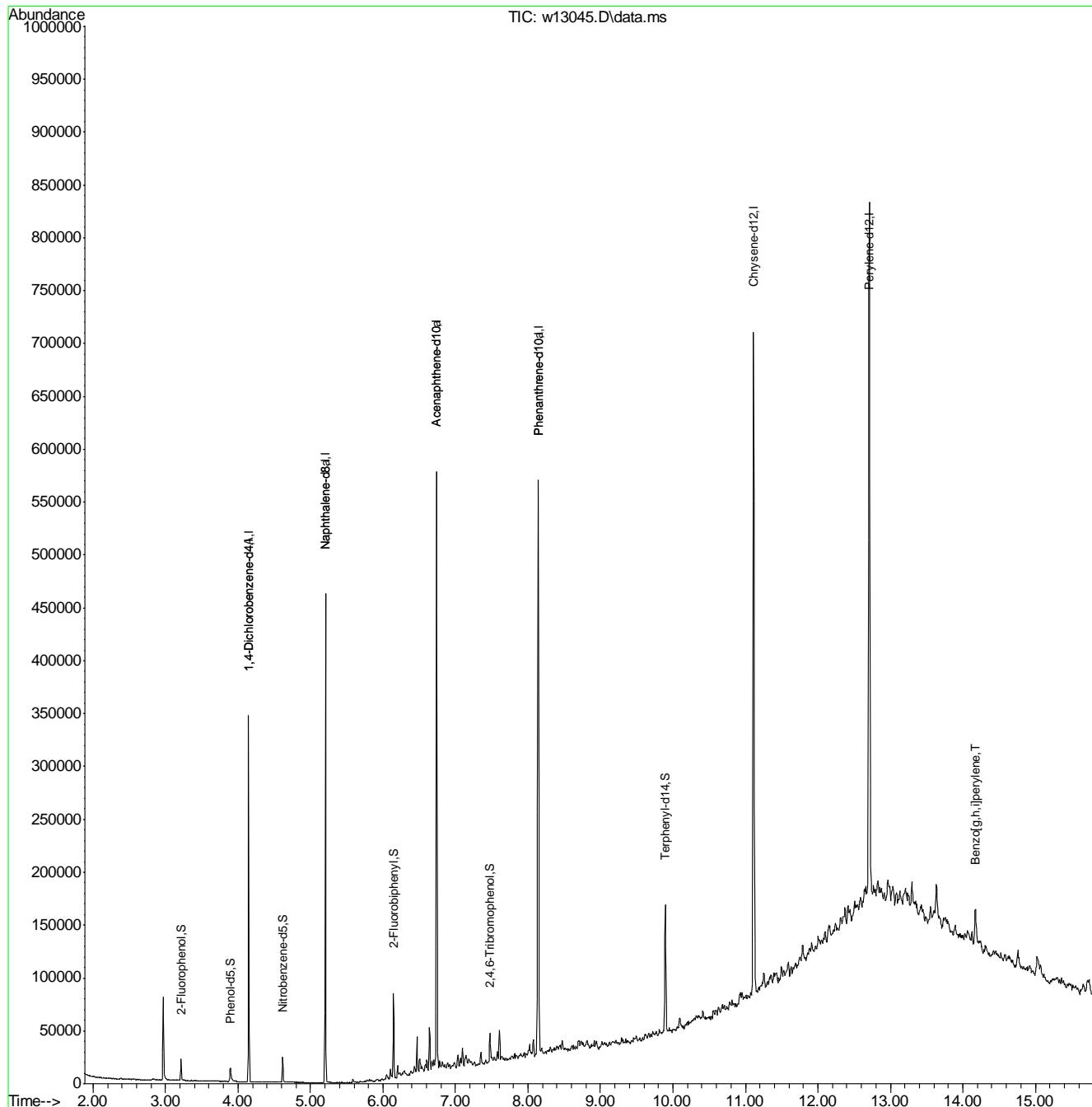
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.147	152	51879	40.00	ppm	0.04
21) 1,4-Dichlorobenzene-d4A	4.147	152	51879	40.00	PPM	0.04
23) Naphthalene-d8	5.205	136	185327	40.00	ppm	0.04
41) Naphthalene-d8a	5.205	136	185327	40.00	ppm	0.04
43) Acenaphthene-d10	6.738	164	123815	40.00	ppm	0.04
65) Acenaphthene-d10a	6.738	164	123815	40.00	ppm	0.04
67) Phenanthrene-d10	8.143	188	226016	40.00	ppm	0.05
80) Phenanthrene-d10a	8.143	188	226016	40.00	ppm	0.05
82) Chrysene-d12	11.114	240	286681	40.00	ppm	0.05
92) Perylene-d12	12.711	264	300514	40.00	ppm	0.07
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.212	112	6780	4.83	ppm	0.04
Spiked Amount 100.000	Range 30 - 130		Recovery = 4.83%#			
7) Phenol-d5	3.896	99	8373	4.89	ppm	0.05
Spiked Amount 100.000	Range 30 - 130		Recovery = 4.89%#			
24) Nitrobenzene-d5	4.617	82	6385	4.67	ppm	0.03
Spiked Amount 50.000	Range 30 - 130		Recovery = 9.34%#			
48) 2-Fluorobiphenyl	6.145	172	23631	5.56	ppm	0.04
Spiked Amount 50.000	Range 30 - 130		Recovery = 11.12%#			
71) 2,4,6-Tribromophenol	7.475	330	5689	6.24	ppm	0.04
Spiked Amount 100.000	Range 30 - 130		Recovery = 6.24%#			
85) Terphenyl-d14	9.896	244	45705	6.92	ppm	0.04
Spiked Amount 50.000	Range 30 - 130		Recovery = 13.84%#			
<hr/>						
Target Compounds				Qvalue		
99) Benzo[g,h,i]perylene	14.175	276	17019	1.99	ppm	88

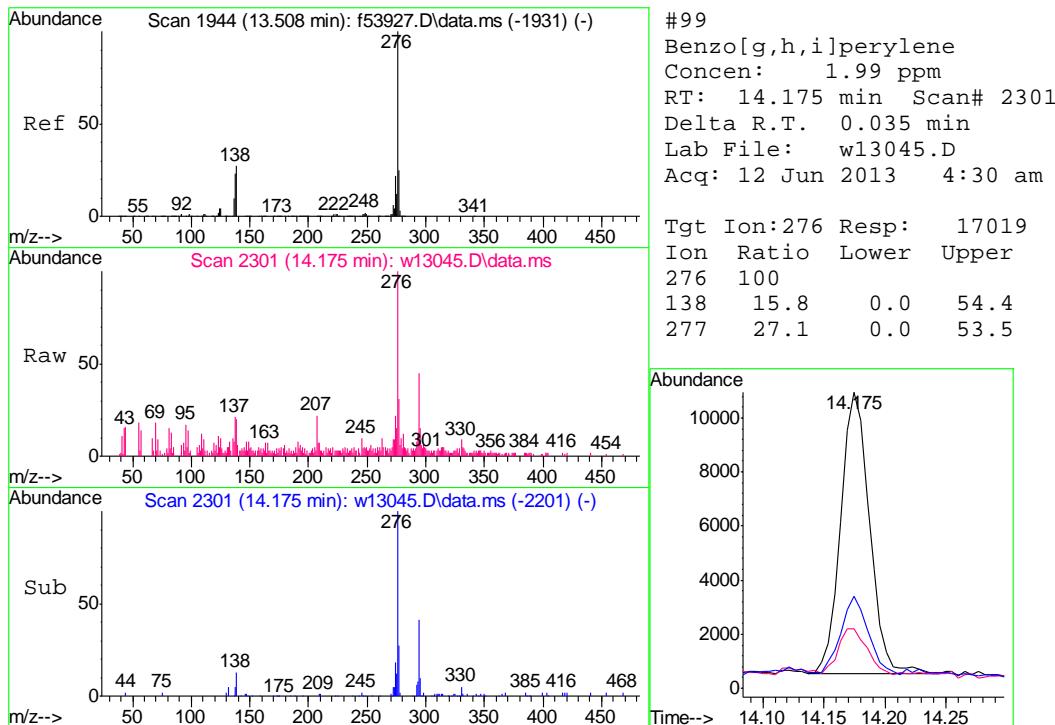
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130611\  
 Data File : w13045.D  
 Acq On : 12 Jun 2013 4:30 am  
 Operator : kristinr  
 Sample : jb38251-2  
 Misc : op33500,msw599,20.07,,,1,1  
 ALS Vial : 41 Sample Multiplier: 1

Quant Time: Jun 18 15:58:05 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration





## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130611\  
 Data File : w13046.D  
 Acq On : 12 Jun 2013 4:55 am  
 Operator : kristinr  
 Sample : jb38251-3  
 Misc : op33500,msw599,20.50,,,1,1  
 ALS Vial : 42 Sample Multiplier: 1

Quant Time: Jun 18 15:58:42 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

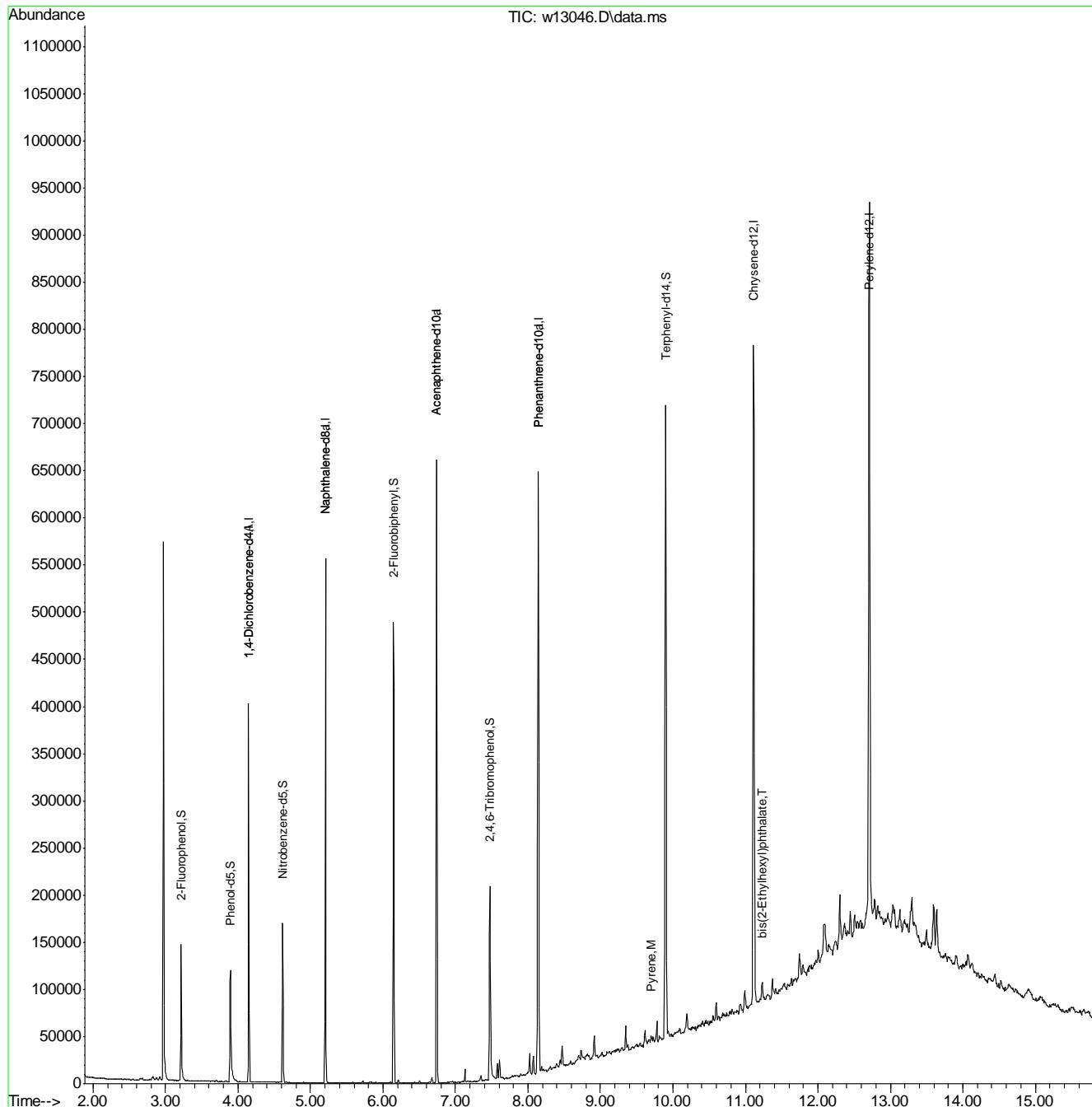
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.147	152	59599	40.00	ppm	0.04
21) 1,4-Dichlorobenzene-d4A	4.147	152	59599	40.00	PPM	0.04
23) Naphthalene-d8	5.205	136	217291	40.00	ppm	0.04
41) Naphthalene-d8a	5.205	136	217291	40.00	ppm	0.04
43) Acenaphthene-d10	6.738	164	142074	40.00	ppm	0.04
65) Acenaphthene-d10a	6.738	164	142074	40.00	ppm	0.04
67) Phenanthrene-d10	8.143	188	261279	40.00	ppm	0.05
80) Phenanthrene-d10a	8.143	188	261279	40.00	ppm	0.05
82) Chrysene-d12	11.113	240	328093	40.00	ppm	0.05
92) Perylene-d12	12.711	264	339590	40.00	ppm	0.07
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.212	112	45079	27.93	ppm	0.04
Spiked Amount 100.000	Range 30 - 130		Recovery = 27.93%#			
7) Phenol-d5	3.896	99	54959	27.95	ppm	0.05
Spiked Amount 100.000	Range 30 - 130		Recovery = 27.95%#			
24) Nitrobenzene-d5	4.617	82	42013	26.19	ppm	0.03
Spiked Amount 50.000	Range 30 - 130		Recovery = 52.38%			
48) 2-Fluorobiphenyl	6.145	172	151974	31.16	ppm	0.04
Spiked Amount 50.000	Range 30 - 130		Recovery = 62.32%			
71) 2,4,6-Tribromophenol	7.475	330	40664	38.59	ppm	0.04
Spiked Amount 100.000	Range 30 - 130		Recovery = 38.59%			
85) Terphenyl-d14	9.901	244	286078	37.83	ppm	0.05
Spiked Amount 50.000	Range 30 - 130		Recovery = 75.66%			
<hr/>						
Target Compounds				Qvalue		
84) Pyrene	9.698	202	1821	0.21	ppm	81
91) bis(2-Ethylhexyl)phtha...	11.231	149	4908	1.22	ppm	80

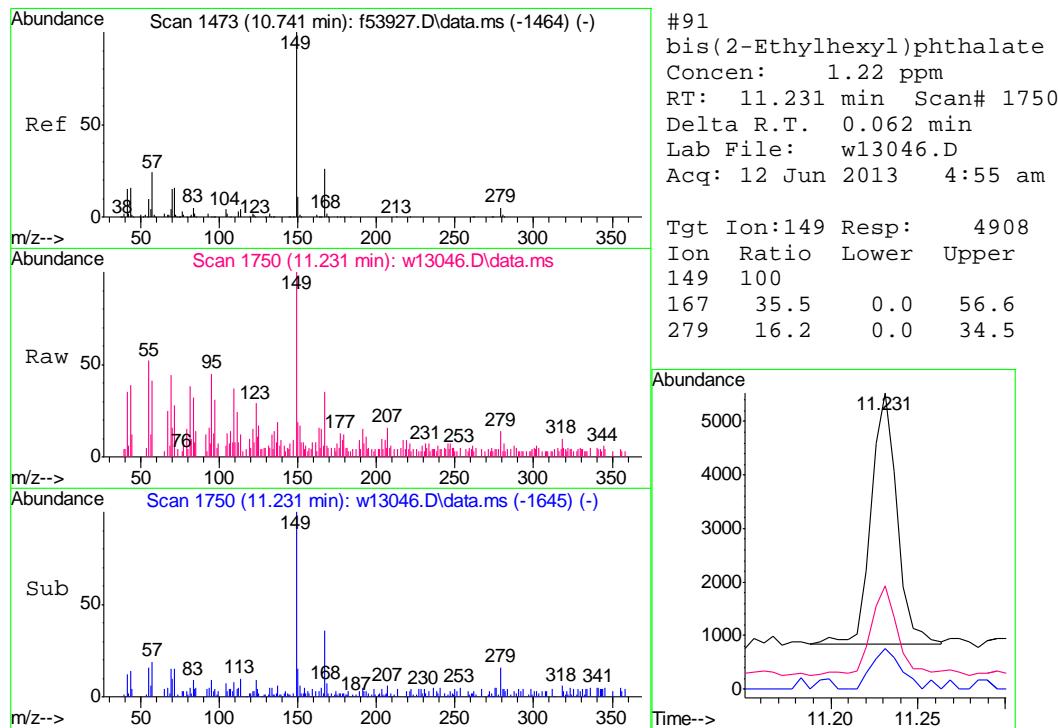
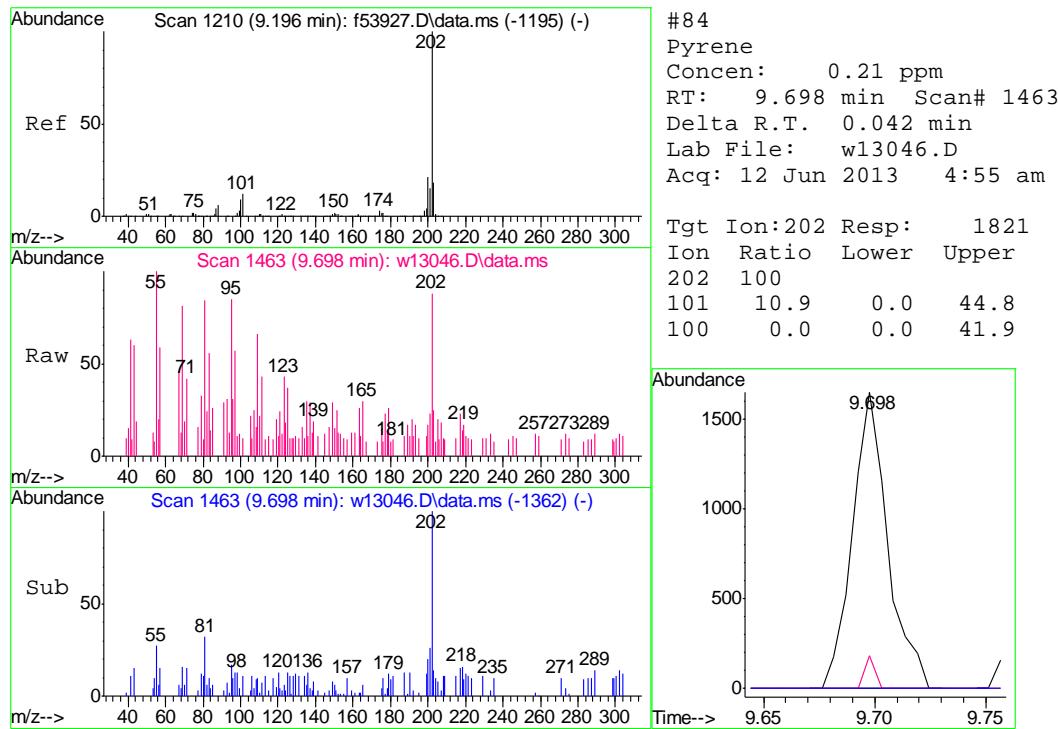
(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130611\  
 Data File : w13046.D  
 Acq On : 12 Jun 2013 4:55 am  
 Operator : kristinr  
 Sample : jb38251-3  
 Misc : op33500,msw599,20.50,,,1,1  
 ALS Vial : 42 Sample Multiplier: 1

Quant Time: Jun 18 15:58:42 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration





## Quantitation Report (QT Reviewed)

Manual Integrations  
APPROVED  
(compounds with "m" flag)

Doug Yargeau  
06/18/13 18:32

Data Path : C:\msdchem\2\DATA\W130611\  
Data File : w13047.D  
Acq On : 12 Jun 2013 5:20 am  
Operator : kristinr  
Sample : jb38251-4  
Misc : op33500,msw599,20.60,,,1,1  
ALS Vial : 43 Sample Multiplier: 1

Quant Time: Jun 18 16:00:13 2013  
Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
Quant Title : SW-864 Method 8270  
QLast Update : Thu Jun 06 09:42:09 2013  
Response via : Initial Calibration

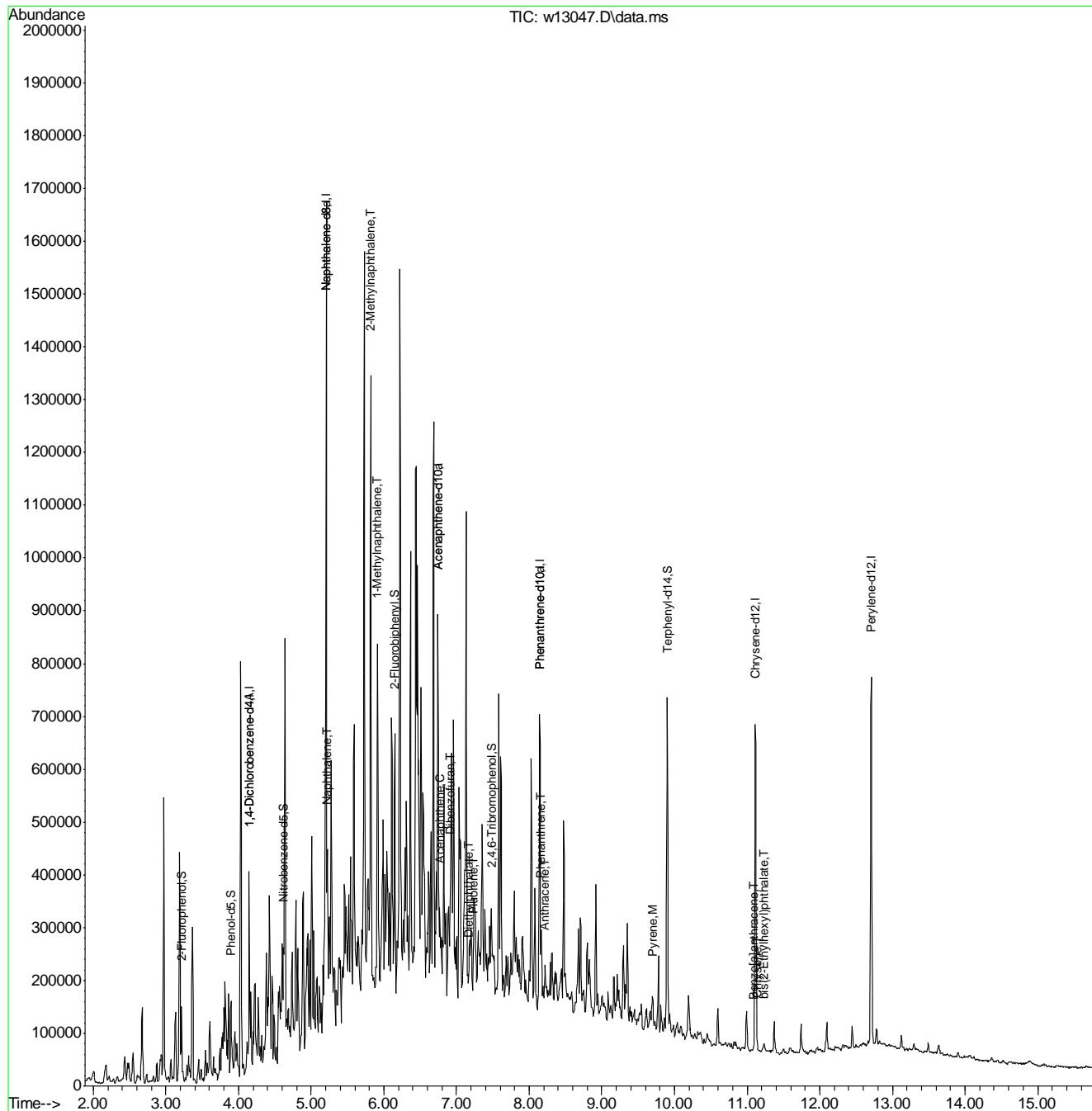
Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.147	152	53964	40.00	ppm	0.04
21) 1,4-Dichlorobenzene-d4A	4.147	152	53964	40.00	PPM	0.04
23) Naphthalene-d8	5.205	136	189536	40.00	ppm	0.04
41) Naphthalene-d8a	5.205	136	189536	40.00	ppm	# 0.04
43) Acenaphthene-d10	6.743	164	126503	40.00	ppm	0.05
65) Acenaphthene-d10a	6.743	164	126503	40.00	ppm	0.05
67) Phenanthrene-d10	8.143	188	233159	40.00	ppm	0.05
80) Phenanthrene-d10a	8.143	188	233159	40.00	ppm	0.05
82) Chrysene-d12	11.113	240	297921	40.00	ppm	0.05
92) Perylene-d12	12.711	264	314247	40.00	ppm	0.07
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.212	112	42513	29.09	ppm	0.04
Spiked Amount 100.000	Range 30 - 130		Recovery = 29.09%#			
7) Phenol-d5	3.896	99	50359	28.28	ppm	0.05
Spiked Amount 100.000	Range 30 - 130		Recovery = 28.28%#			
24) Nitrobenzene-d5	4.617	82	42046	30.04	ppm	0.03
Spiked Amount 50.000	Range 30 - 130		Recovery = 60.08%			
48) 2-Fluorobiphenyl	6.151	172	135171	31.13	ppm	0.04
Spiked Amount 50.000	Range 30 - 130		Recovery = 62.26%			
71) 2,4,6-Tribromophenol	7.481	330	33167	35.27	ppm	0.05
Spiked Amount 100.000	Range 30 - 130		Recovery = 35.27%			
85) Terphenyl-d14	9.901	244	250078	36.42	ppm	0.05
Spiked Amount 50.000	Range 30 - 130		Recovery = 72.84%			
<hr/>						
Target Compounds				Qvalue		
33) Naphthalene	5.221	128	106126	21.68	ppm	97
38) 2-Methylnaphthalene	5.819	142	255939	70.32	ppm	99
39) 1-Methylnaphthalene	5.910	142	156302	44.77	ppm	99
53) Acenaphthene	6.770	153	8372m	2.38	ppm	
55) Dibenzofuran	6.914	168	13397	2.46	ppm	98
59) Fluorene	7.230	166	17815m	4.15	ppm	
61) Diethylphthalate	7.166	149	3844m	1.00	ppm	
75) Phenanthrene	8.165	178	69401	11.00	ppm	97
76) Anthracene	8.213	178	7913m	1.20	ppm	
84) Pyrene	9.703	202	19719	2.50	ppm	88
89) Benzo[a]anthracene	11.092	228	2375	0.30	ppm	78
90) Chrysene	11.140	228	3235	0.42	ppm	84
91) bis(2-Ethylhexyl)phtha...	11.231	149	1445	0.40	ppm	80
<hr/>						

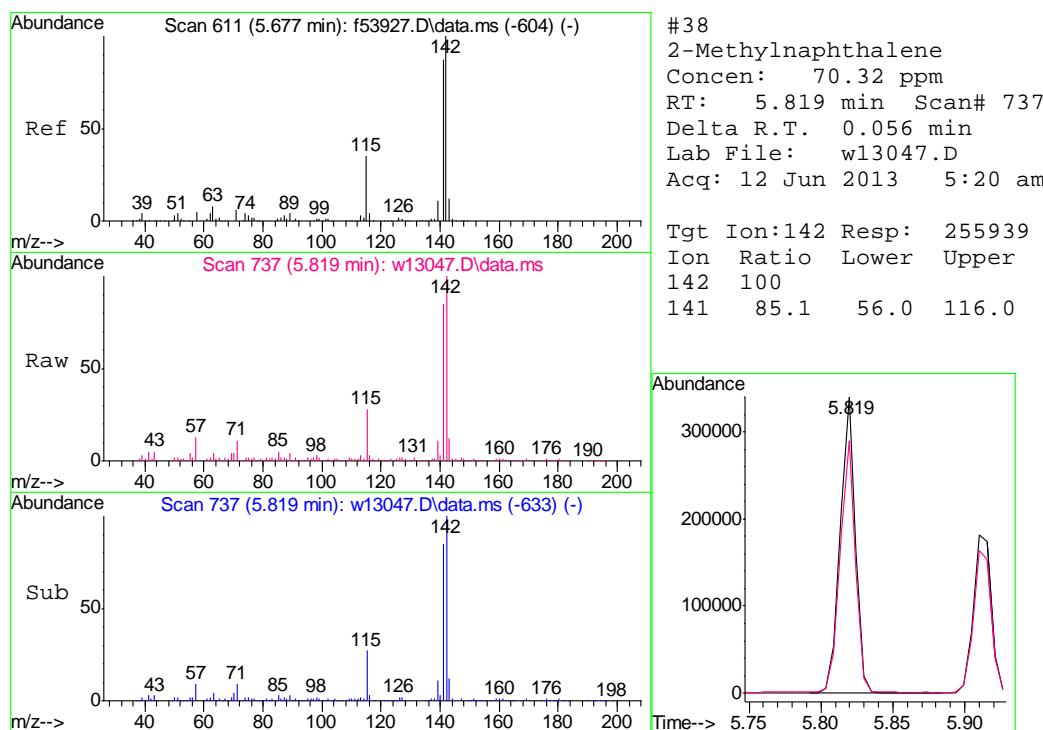
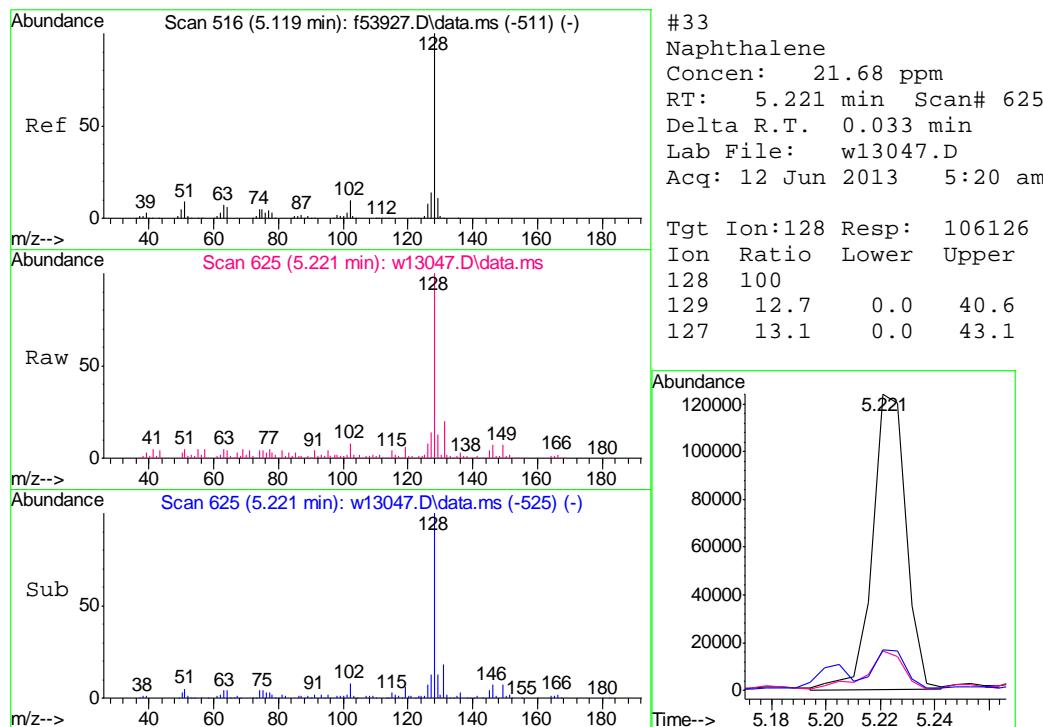
(#) = qualifier out of range (m) = manual integration (+) = signals summed

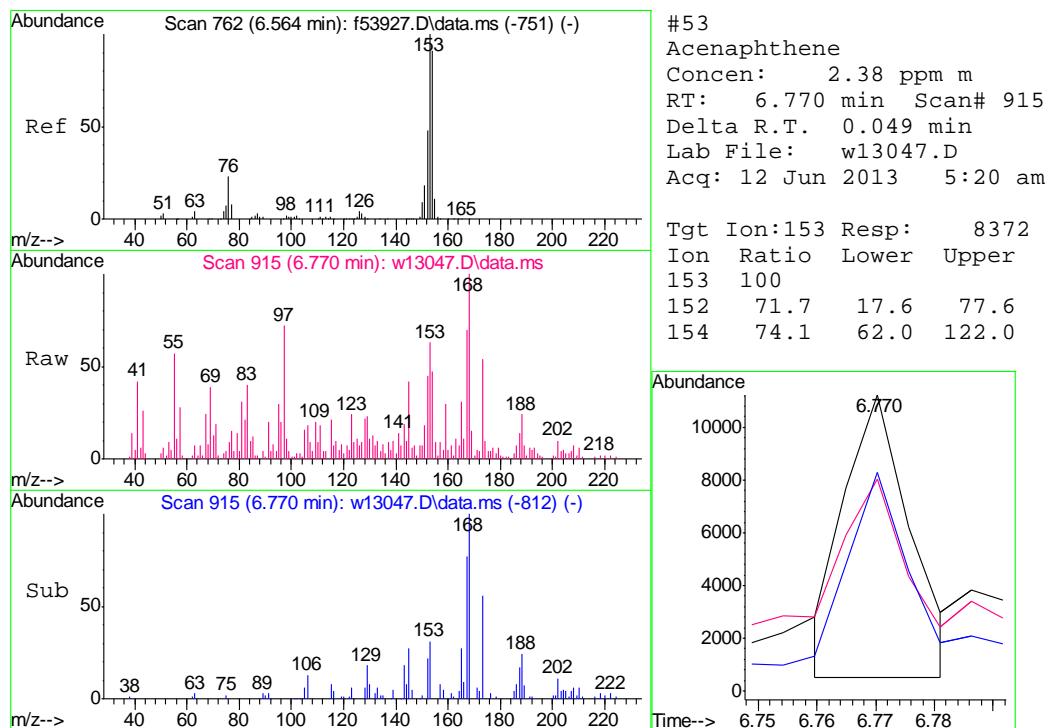
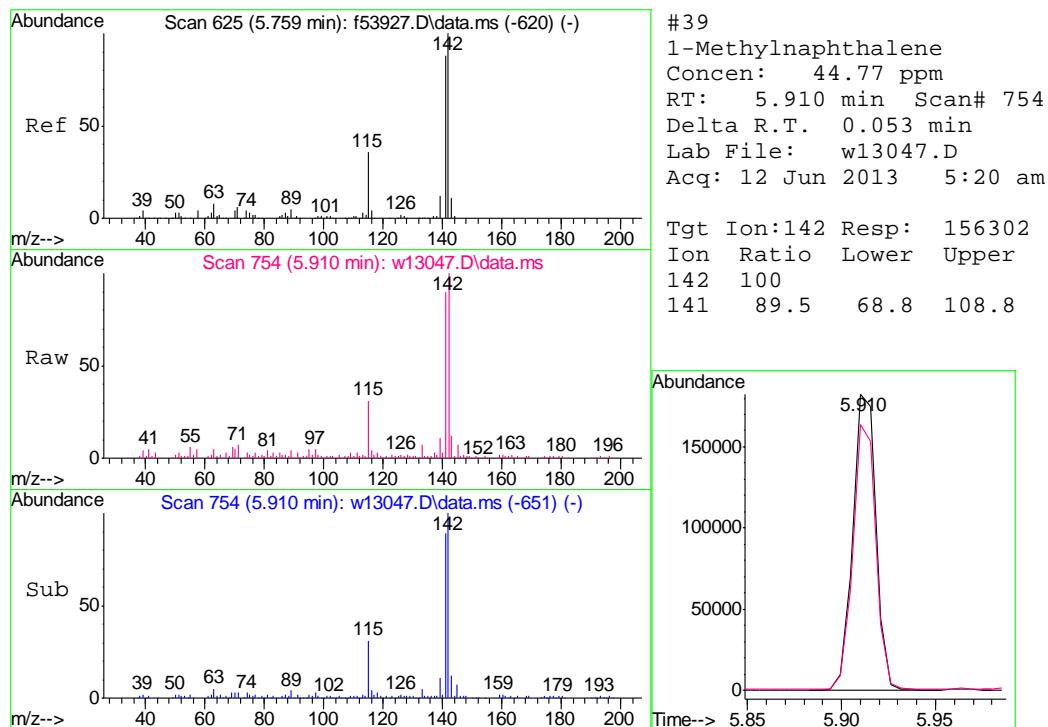
## Quantitation Report (QT Reviewed)

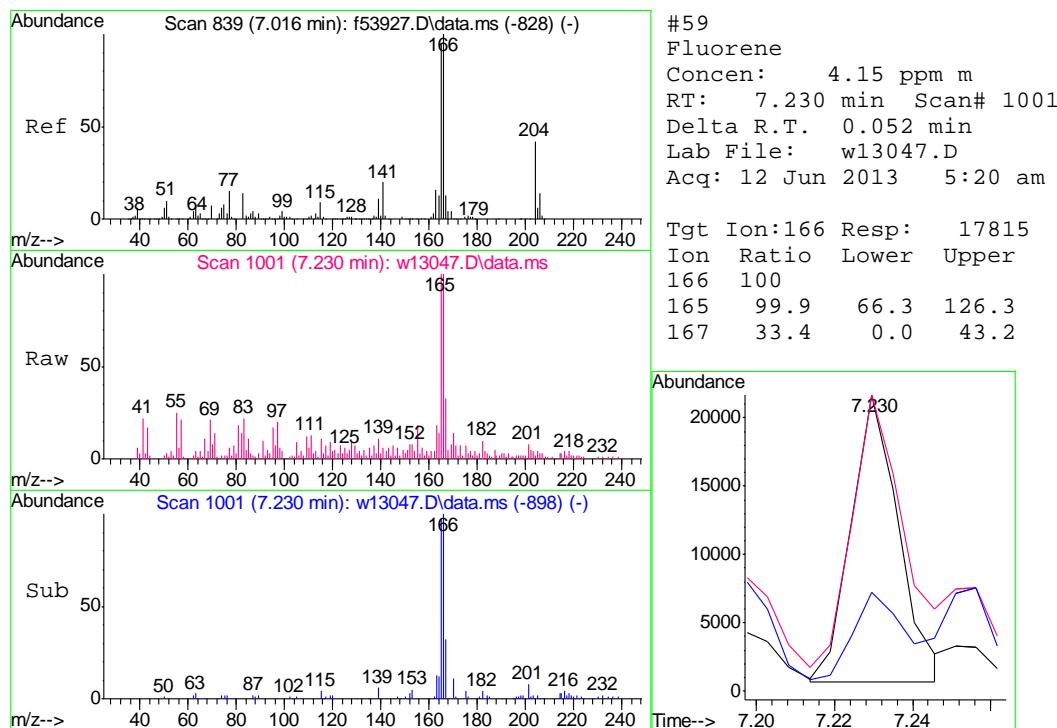
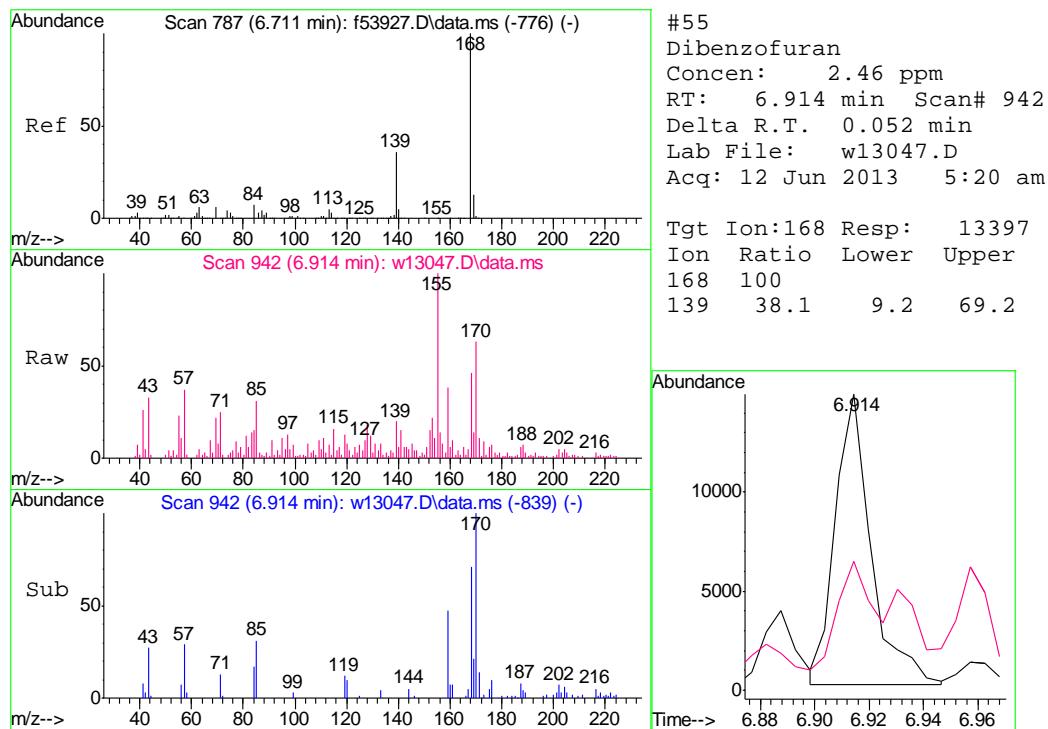
Data Path : C:\msdchem\2\DATA\W130611\  
 Data File : w13047.D  
 Acq On : 12 Jun 2013 5:20 am  
 Operator : kristinr  
 Sample : jb38251-4  
 Misc : op33500,msw599,20.60,,,1,1  
 ALS Vial : 43 Sample Multiplier: 1

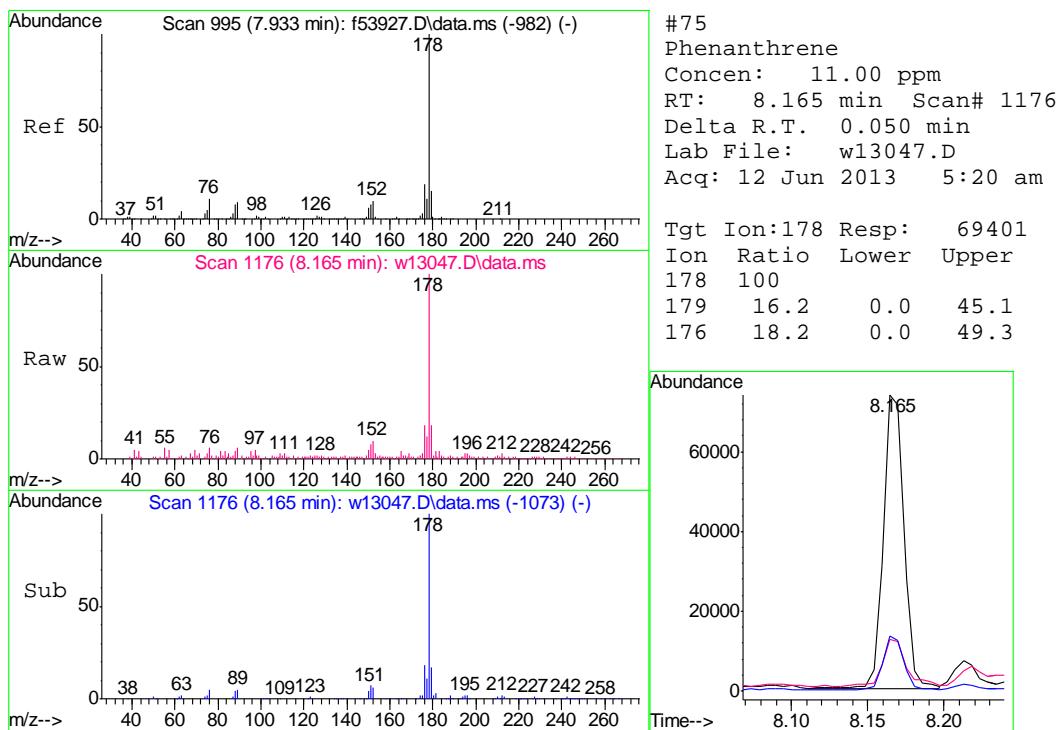
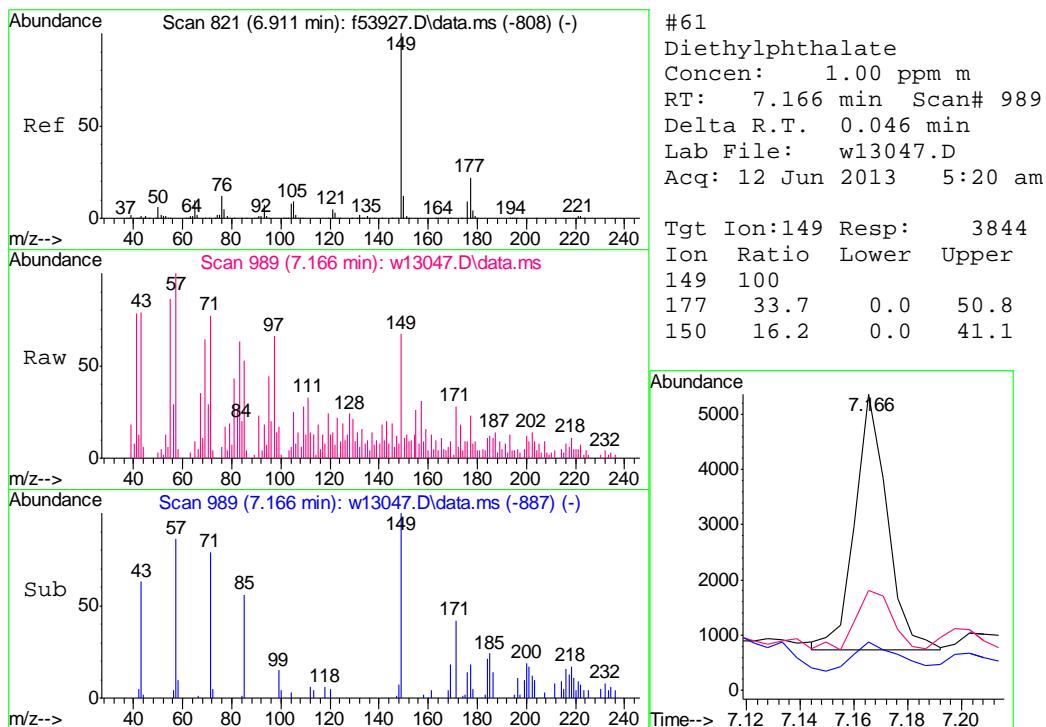
Quant Time: Jun 18 16:00:13 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

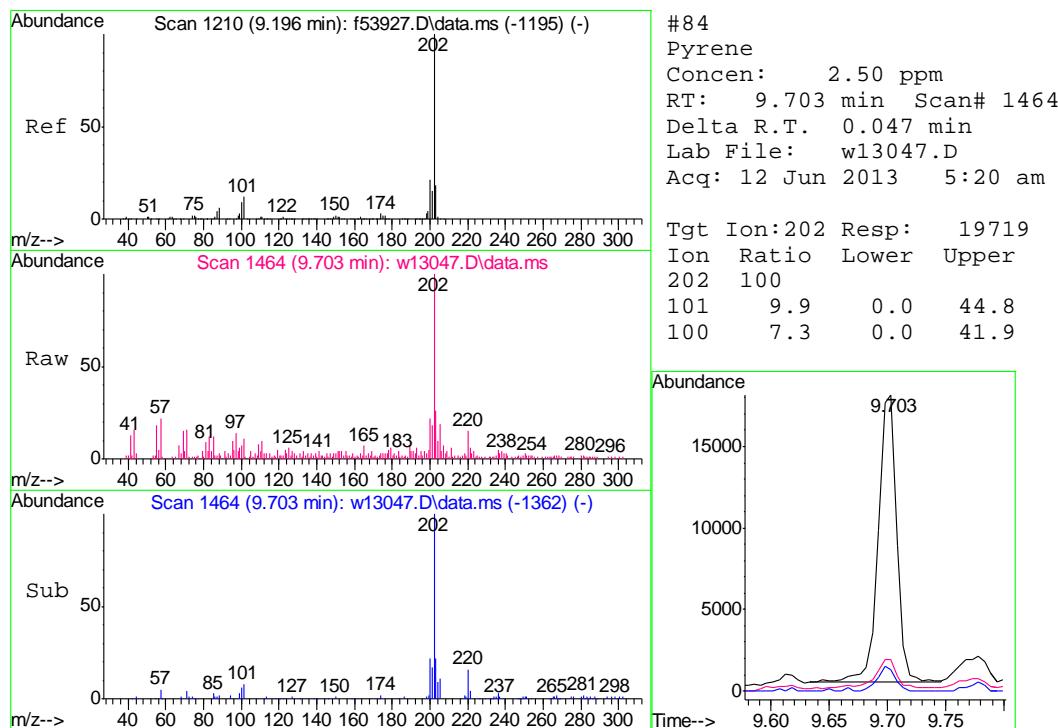
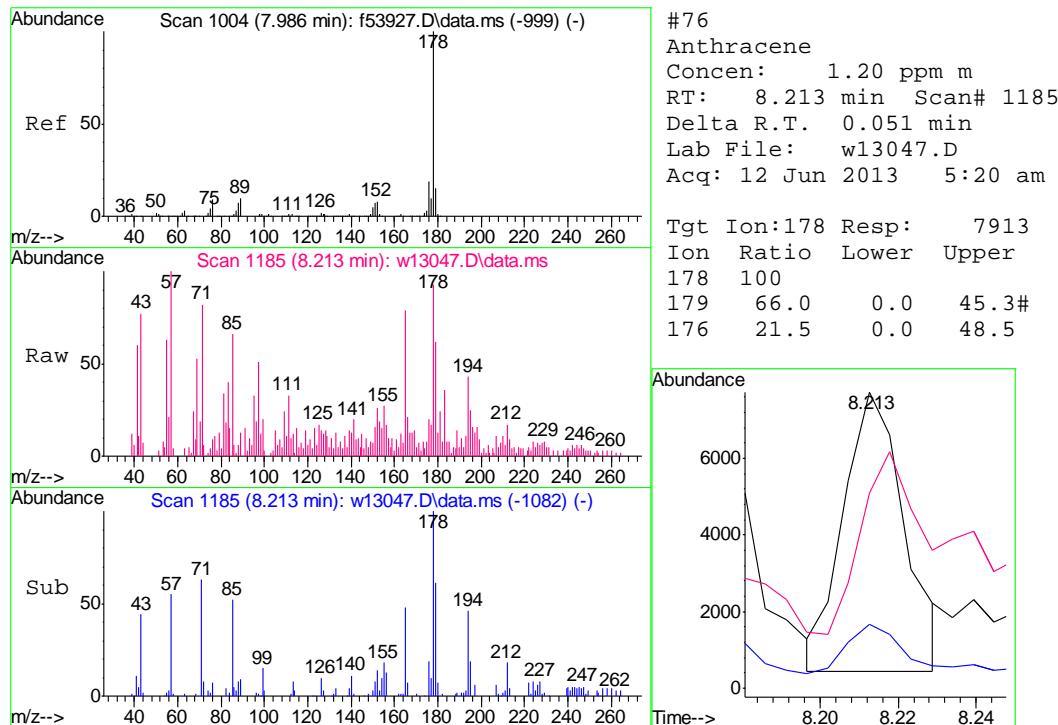


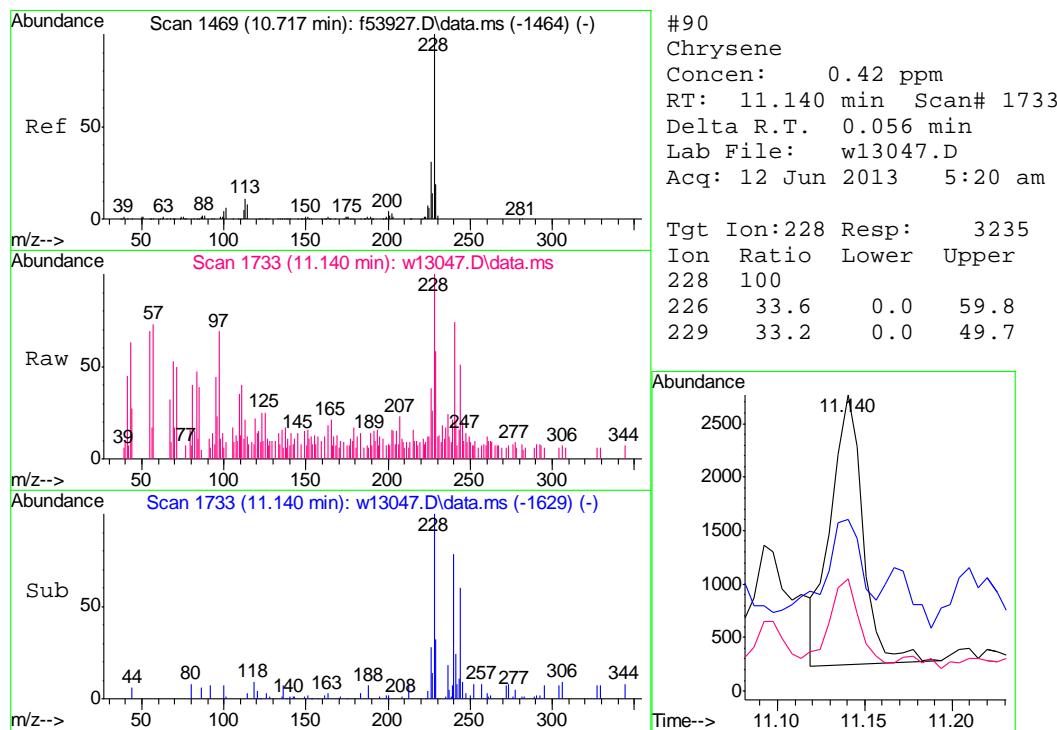
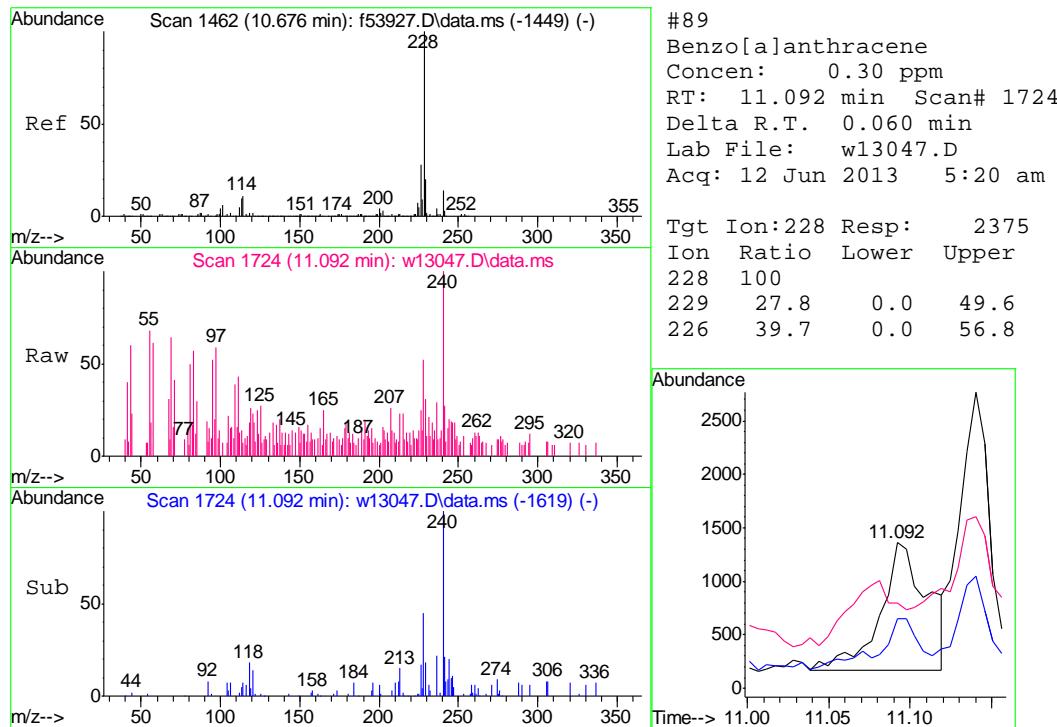


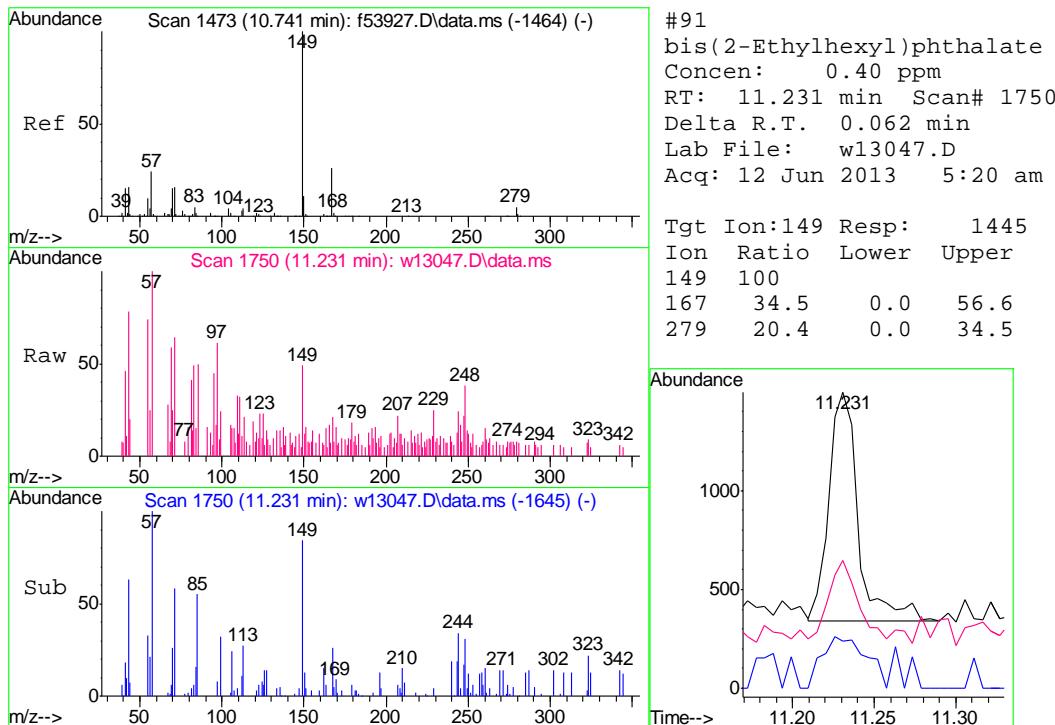










10.1.4  
10

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130611\  
 Data File : w13001.D  
 Acq On : 11 Jun 2013 8:46 am  
 Operator : kristinr  
 Sample : op33500-mb  
 Misc : op33500,msw598,20.35,,,1,1  
 ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 18 12:00:37 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration

Compound	R.T.	QIon	Response	Conc	Units	Dev(Min)
<hr/>						
Internal Standards						
1) 1,4-Dichlorobenzene-d4	4.174	152	53742	40.00	ppm	0.07
21) 1,4-Dichlorobenzene-d4A	4.174	152	53742	40.00	PPM	0.07
23) Naphthalene-d8	5.226	136	193795	40.00	ppm	0.06
41) Naphthalene-d8a	5.226	136	193795	40.00	ppm	0.06
43) Acenaphthene-d10	6.765	164	128339	40.00	ppm	0.07
65) Acenaphthene-d10a	6.765	164	128339	40.00	ppm	0.07
67) Phenanthrene-d10	8.165	188	238783	40.00	ppm	0.07
80) Phenanthrene-d10a	8.165	188	238783	40.00	ppm	0.07
82) Chrysene-d12	11.140	240	301136	40.00	ppm	0.08
92) Perylene-d12	12.732	264	304524	40.00	ppm	0.09
<hr/>						
System Monitoring Compounds						
5) 2-Fluorophenol	3.234	112	45271	31.11	ppm	0.06
Spiked Amount 100.000	Range 30 - 130		Recovery = 31.11%			
7) Phenol-d5	3.918	99	53604	30.23	ppm	0.07
Spiked Amount 100.000	Range 30 - 130		Recovery = 30.23%			
24) Nitrobenzene-d5	4.639	82	43284	30.25	ppm	0.05
Spiked Amount 50.000	Range 30 - 130		Recovery = 60.50%			
48) 2-Fluorobiphenyl	6.167	172	144506	32.80	ppm	0.06
Spiked Amount 50.000	Range 30 - 130		Recovery = 65.60%			
71) 2,4,6-Tribromophenol	7.497	330	32394	33.64	ppm	0.07
Spiked Amount 100.000	Range 30 - 130		Recovery = 33.64%			
85) Terphenyl-d14	9.922	244	252371	36.36	ppm	0.07
Spiked Amount 50.000	Range 30 - 130		Recovery = 72.72%			

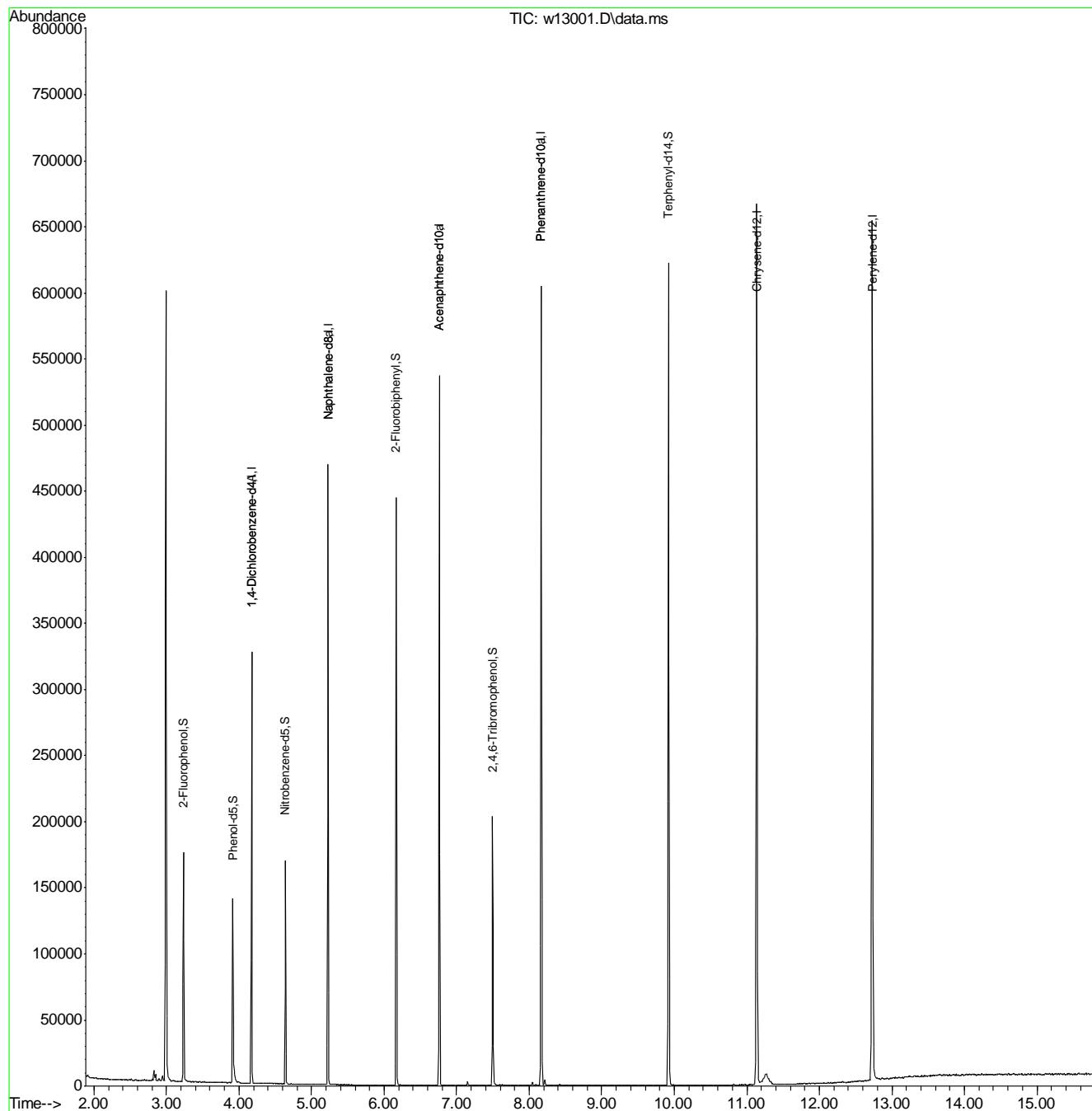
Target Compounds	Qvalue
<hr/>	

(#) = qualifier out of range (m) = manual integration (+) = signals summed

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\2\DATA\W130611\  
 Data File : w13001.D  
 Acq On : 11 Jun 2013 8:46 am  
 Operator : kristinr  
 Sample : op33500-mb  
 Misc : op33500,msw598,20.35,,,1,1  
 ALS Vial : 1 Sample Multiplier: 1

Quant Time: Jun 18 12:00:37 2013  
 Quant Method : C:\msdchem\1\methods\W130530\_8270+.m  
 Quant Title : SW-864 Method 8270  
 QLast Update : Thu Jun 06 09:42:09 2013  
 Response via : Initial Calibration





## **GC Volatiles**

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### **QC Data Summaries**

**(Accutest Labs of New England, Inc.)**

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**Includes the following where applicable:**

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries
- Initial and Continuing Calibration Summaries

**Method Blank Summary**

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33518-MB	YZ81252.D	1	06/08/13	CZ	06/07/13	OP33518	GYZ7174

The QC reported here applies to the following samples:

Method: SW846 8011

JB38251-1, JB38251-2, JB38251-3, JB38251-4

CAS No.	Compound	Result	RL	MDL	Units	Q
106-93-4	1,2-Dibromoethane	ND	2.5	0.96	ug/kg	

CAS No.	Surrogate Recoveries	Limits
460-00-4	Bromofluorobenzene (S)	135%
460-00-4	Bromofluorobenzene (S)	123%

## Blank Spike Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33518-BS	YZ81253.D	1	06/08/13	CZ	06/07/13	OP33518	GYZ7174

The QC reported here applies to the following samples:

Method: SW846 8011

JB38251-1, JB38251-2, JB38251-3, JB38251-4

CAS No.	Compound	Spike	BSP	BSP	Limits
		ug/kg	ug/kg	%	
106-93-4	1,2-Dibromoethane	32.7	45.3	138	56-140

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	Bromofluorobenzene (S)	140%	61-167%
460-00-4	Bromofluorobenzene (S)	122%	61-167%

11.2.1  
11

---

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP33518-MS	YZ81254.D	1	06/09/13	CZ	06/07/13	OP33518	GYZ7174
OP33518-MSD	YZ81255.D	1	06/09/13	CZ	06/07/13	OP33518	GYZ7174
JB38251-1	YZ81256.D	1	06/09/13	CZ	06/07/13	OP33518	GYZ7174

The QC reported here applies to the following samples:

Method: SW846 8011

JB38251-1, JB38251-2, JB38251-3, JB38251-4

CAS No.	Compound	JB38251-1		Spike	MS	MS	MSD	MSD	RPD	Limits Rec/RPD
		ug/kg	Q	ug/kg	ug/kg	%	ug/kg	%		
106-93-4	1,2-Dibromoethane	ND		41.8	57.9	138	61.1	142* a	5	48-141/27

CAS No.	Surrogate Recoveries	MS	MSD	JB38251-1	Limits
460-00-4	Bromofluorobenzene (S)	156%	171%* a	148%	61-167%
460-00-4	Bromofluorobenzene (S)	120%	127%	111%	61-167%

(a) Outside control limits due to possible matrix interference.

11.3.1  
11

\* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Method: SW846 8011

Matrix: SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 <sup>a</sup>	S1 <sup>b</sup>
JB38251-1	YZ81256.D	148.0	111.0
JB38251-2	YZ81257.D	142.0	127.0
JB38251-3	YZ81258.D	149.0	133.0
JB38251-4	YZ81259.D	128.0	156.0
OP33518-BS	YZ81253.D	140.0	122.0
OP33518-MB	YZ81252.D	135.0	123.0
OP33518-MS	YZ81254.D	156.0	120.0
OP33518-MSD	YZ81255.D	171.0* <sup>c</sup>	127.0

Surrogate  
Compounds

Recovery  
Limits

S1 = Bromofluorobenzene (S)      61-167%

- (a) Recovery from GC signal #2
- (b) Recovery from GC signal #1
- (c) Outside control limits due to possible matrix interference.

11.4.1  
11

# GC Surrogate Retention Time Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

Check Std:	GYZ7174-ICC7174	Injection Date:	06/08/13
Lab File ID:	YZ81246.D	Injection Time:	20:24
Instrument ID:	GCYZ	Method:	SW846 8011

S1 <sup>a</sup>  
RT      S1 <sup>b</sup>  
RT

Check Std	3.92	3.72
-----------	------	------

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	S1 <sup>a</sup> RT	S1 <sup>b</sup> RT
OP33518-MB	YZ81252.D	06/08/13	23:21	3.92	3.72
OP33518-BS	YZ81253.D	06/08/13	23:52	3.92	3.72
OP33518-MS	YZ81254.D	06/09/13	00:24	3.92	3.72
OP33518-MSD	YZ81255.D	06/09/13	00:56	3.92	3.72
JB38251-1	YZ81256.D	06/09/13	01:26	3.92	3.72
JB38251-2	YZ81257.D	06/09/13	01:57	3.92	3.72
JB38251-3	YZ81258.D	06/09/13	02:29	3.92	3.72
JB38251-4	YZ81259.D	06/09/13	03:01	3.92	3.72
ZZZZZZ	YZ81260.D	06/09/13	03:32	3.92	3.72
ZZZZZZ	YZ81261.D	06/09/13	04:05	3.92	3.72

Surrogate  
Compounds

S1 = Bromofluorobenzene (S)

- (a) Retention time from GC signal #2  
(b) Retention time from GC signal #1

11.5.1  
11

**Initial Calibration Summary**

Job Number: JB38251

Sample: GYZ7174-ICC7174

Account: ALNJ Accutest New Jersey

Lab FileID: YZ81246.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Response Factor Report GCY2

Method : C:\msdchem\1\METHODS\Es130608.M (RTE Integrator)

Title : EDB /pest2/pest

Last Update : Tue Jun 11 09:03:35 2013

Response via : Initial Calibration

## Calibration Files

1	=yz81245.D	2	=yz81246.D	3	=yz81247.D	4	=yz81248.D
5	=yz81249.D	6	=yz81250.D				

	Compound	1	2	3	4	5	6	Avg	%RSD
<hr/>									
1)	1,2-Dibromoethane	7.654	7.539	7.592	7.234	6.798	5.834	7.109 E3	9.85
2)	s 4-Bromofluorobenzen	0.482	0.512	0.552	0.597	0.761	1.001	0.651 E3	30.38
	----- Quadratic regression -----							Coefficient = 1.0000	
	Response Ratio = 2492.83516 + 507.31174 *A + -0.18942 *A^2								
3)	1,2-Dibromo-3-chlor	1.476	1.462	1.458	1.444	1.397	1.429	1.444 E4	1.95

## Signal #2

1)	1,2-Dibromoethane	0.917	0.965	1.045	1.064	0.922	0.850	0.960 E4	8.52
2)	s 4-Bromofluorobenzen	5.449	5.667	5.532	5.297	5.210	6.236	5.565 E2	6.59
3)	1,2-Dibromo-3-chlor	1.654	1.666	1.695	1.691	1.695	1.689	1.682 E4	1.05

---

(#) = Out of Range

Es130608.M

Tue Jun 11 09:05:31 2013

11.6.1

**Initial Calibration Verification**

Job Number: JB38251

Sample: GYZ7174-ICV7174

Account: ALNJ Accutest New Jersey

Lab FileID: YZ81251.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

## Evaluate Continuing Calibration Report

Data File : C:\msdchem\1\DATA\yz...08\yz81251.D\ECD1A.CH Vial: 22  
 Acq On : 08 Jun 2013 10:51 pm Operator: caobinz  
 Sample : icv7174-20.edb 20-icv Inst : GCYZ  
 Misc : op33518,gyz7174,30,,,50,,soil Multiplr: 1.00  
 IntFile : rteint.p

Data File : C:\msdchem\1\DATA\yz130608\yz81251.D\ECD2B.CH Vial: 22  
 Acq On : 08 Jun 2013 10:51 pm Operator: caobinz  
 Sample : edb 20-icv Inst : GCYZ  
 Misc : op33518,gyz7174,30,,,50,,soil Multiplr: 1.00  
 IntFile : rteint2.p

Method : C:\msdchem\1\METHODS\Es130608.M (RTE Integrator)  
 Title : EDB /pest2/pest  
 Last Update : Tue Jun 11 09:03:35 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
<hr/>								
1	1,2-Dibromoethane	7.109	7.433 E3	-4.6	99	0.00	2.59-	2.65
<hr/>								
2 s	4-Bromofluorobenzene	100.000	103.119	-3.1	103	0.00	3.69-	3.75
<hr/>								
3	1,2-Dibromo-3-chloropr	14.443	14.766 E3	-2.2	101	0.00	5.50-	5.56
<hr/>								
***** Signal #2 *****								
1	1,2-Dibromoethane	9.604	10.141 E3	-5.6	105	0.00	2.63-	2.69
2 s	4-Bromofluorobenzene	556.509	584.990	-5.1	103	0.00	3.89-	3.95
3	1,2-Dibromo-3-chloropr	16.817	17.022 E3	-1.2	102	0.00	5.41-	5.47
<hr/>								

(#) = Out of Range  
 yz81246.D Es130608.M

SPCC's out = 0 CCC's out = 0  
 Tue Jun 11 09:05:16 2013

**Continuing Calibration Summary**

Job Number: JB38251

Sample: GYZ7174-CC7174

Account: ALNJ Accutest New Jersey

Lab FileID: YZ81262.D

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

**Evaluate Continuing Calibration Report**

Data File : C:\msdchem\1\DATA\yz...08\yz81262.D\ECD1A.CH Vial: 25  
 Acq On : 09 Jun 2013 4:36 am Operator: caobinz  
 Sample : cc7174-20,edb 20 Inst : GCYZ  
 Misc : op33518,gyz7174,30.24,,,50,,soil Multiplr: 1.00  
 IntFile : rteint.p

Data File : C:\msdchem\1\DATA\yz130608\yz81262.D\ECD2B.CH Vial: 25  
 Acq On : 09 Jun 2013 4:36 am Operator: caobinz  
 Sample : edb 20 Inst : GCYZ  
 Misc : op33518,gyz7174,30.24,,,50,,soil Multiplr: 1.00  
 IntFile : rteint2.p

Method : C:\msdchem\1\METHODS\Es130608.M (RTE Integrator)  
 Title : EDB /pest2/pest  
 Last Update : Tue Jun 11 09:03:35 2013  
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 85% Max. R.T. Dev 0.50min  
 Max. RRF Dev : 15% Max. Rel. Area : 115%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)	RT	Window
<hr/>								
1	1,2-Dibromoethane	7.109	7.369 E3	-3.7	98	0.00	2.59-	2.65
<hr/>								
2 s	4-Bromofluorobenzene	100.000	96.482	3.5	97	0.00	3.69-	3.75
<hr/>								
3	1,2-Dibromo-3-chloropr	14.443	14.926 E3	-3.3	102	0.00	5.50-	5.56
<hr/>								
***** Signal #2 *****								
1	1,2-Dibromoethane	9.604	10.008 E3	-4.2	104	0.00	2.63-	2.69
2 s	4-Bromofluorobenzene	556.509	589.120	-5.9	104	0.00	3.89-	3.95
3	1,2-Dibromo-3-chloropr	16.817	17.418 E3	-3.6	105	0.00	5.41-	5.47
<hr/>								

(#) = Out of Range  
 yz81246.D Es130608.M

SPCC's out = 0 CCC's out = 0  
 Tue Jun 11 09:21:02 2013



## GC Volatiles

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### Raw Data

(Accutest Labs of New England, Inc.)

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Manual Integrations  
APPROVED  
(compounds with "m" flag)

Andri Piluri  
06/11/13 11:26

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81256.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 09 Jun 2013 1:26 am  
 Operator : caobinz  
 Sample : jb38251-1  
 Misc : op33518,gyz7174,30.81,,,50,,soil  
 ALS Vial : 30 Sample Multiplier: 1

Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:15:35 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 3.720 3.920 30079 41196 55.528m 74.026m#  
 Spiked Amount 50.000 Range 40 - 168 Recovery = 111.06% 148.05%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

12.1.1

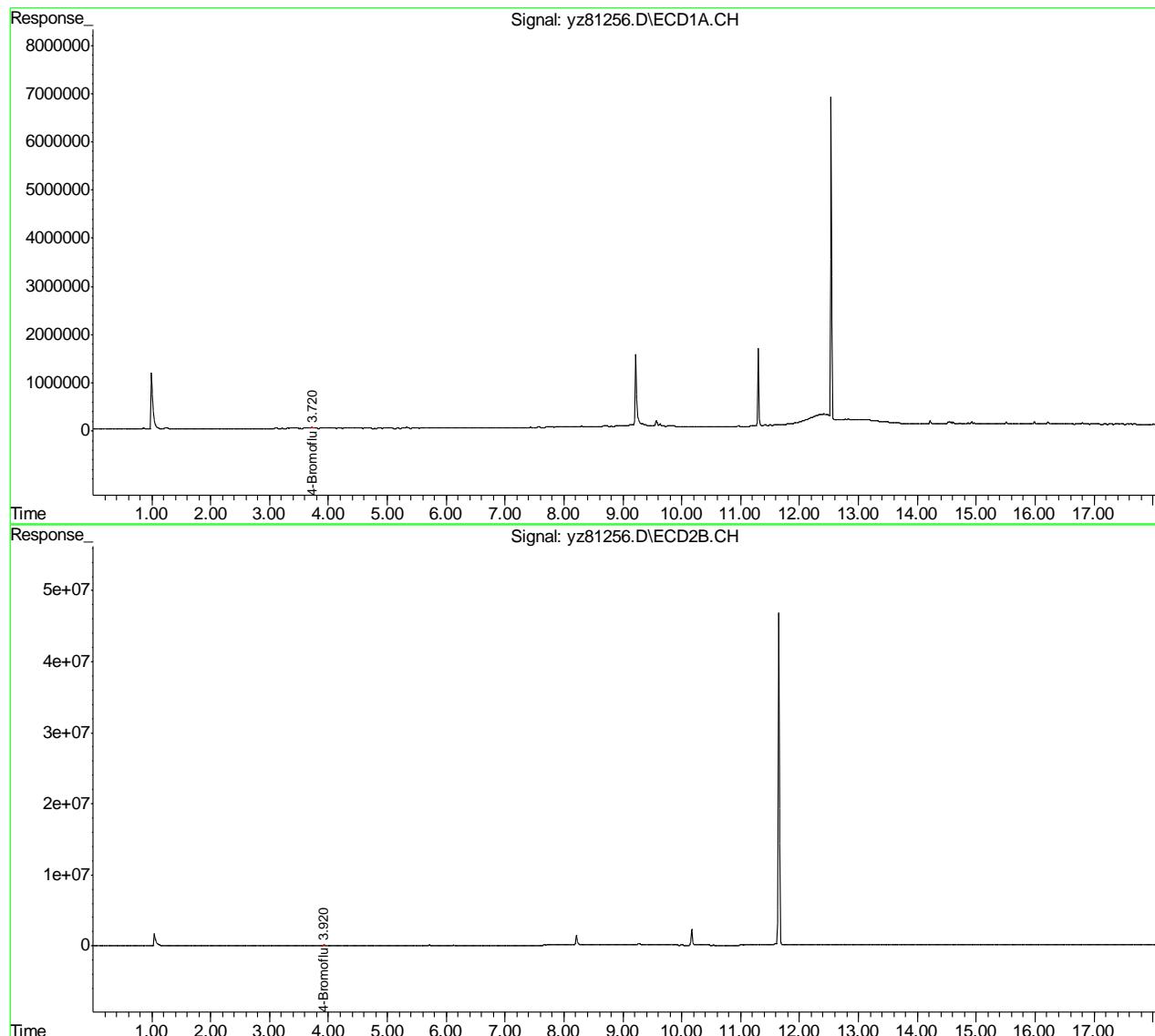
12

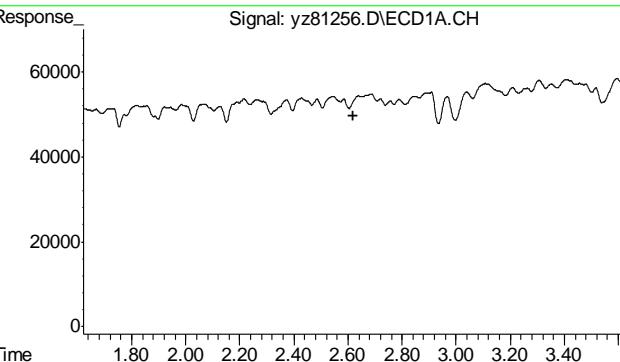
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81256.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 09 Jun 2013 1:26 am  
 Operator : caobinz  
 Sample : jb38251-1  
 Misc : op33518,gyz7174,30.81,,,50,,soil  
 ALS Vial : 30 Sample Multiplier: 1

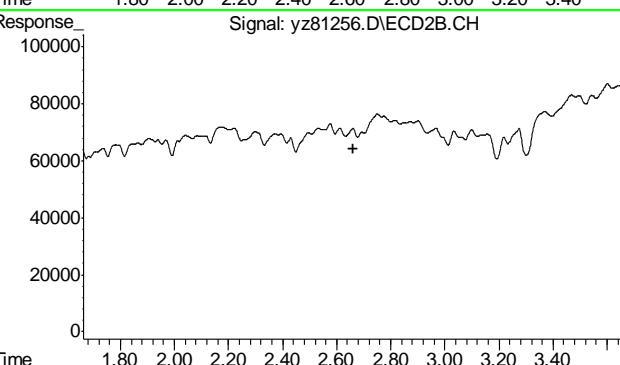
Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:15:35 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

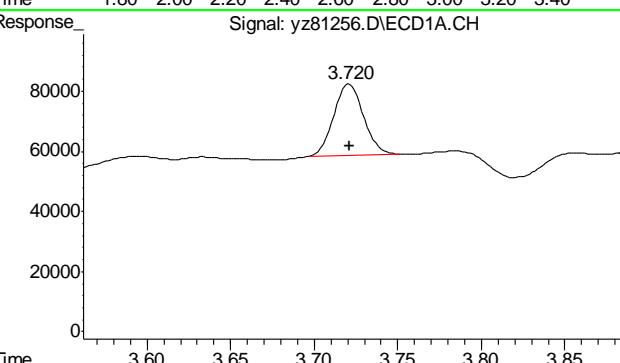




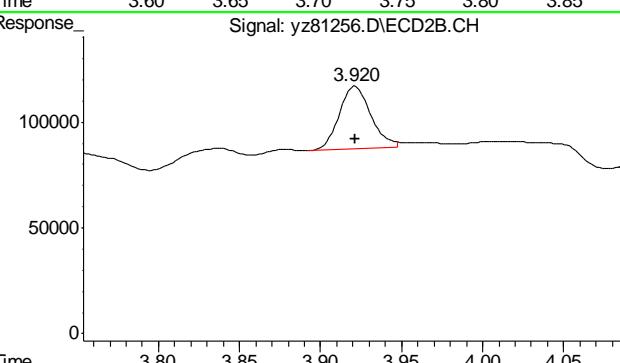
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 2.621 min  
Response: 0  
Conc: N.D.



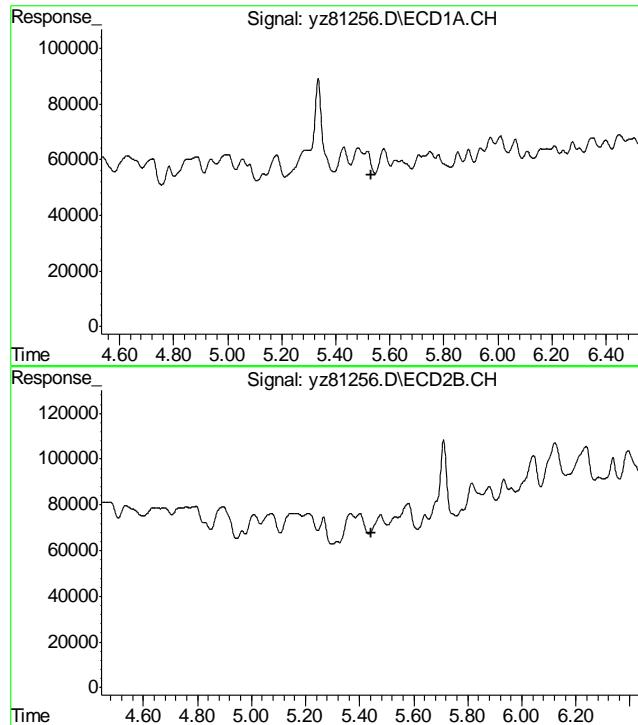
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 2.663 min  
Response: 0  
Conc: N.D.



#2 4-Bromofluorobenzene  
R.T.: 3.720 min  
Delta R.T.: 0.000 min  
Response: 30079  
Conc: 55.53 ug/L m



#2 4-Bromofluorobenzene  
R.T.: 3.920 min  
Delta R.T.: 0.000 min  
Response: 41196  
Conc: 74.03 ug/L m



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 5.533 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 5.445 min  
Response: 0  
Conc: N.D.

Manual Integrations  
APPROVED  
(compounds with "m" flag)

Andri Piluri  
06/11/13 11:26

## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81257.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 09 Jun 2013 1:57 am  
 Operator : caobinz  
 Sample : jb38251-2  
 Misc : op33518,gyz7174,30.27,,,50,,soil  
 ALS Vial : 31 Sample Multiplier: 1

Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:16:09 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 3.722 3.920 33852 39434 63.311m 70.860m  
 Spiked Amount 50.000 Range 40 - 168 Recovery = 126.62% 141.72%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

12.1.2

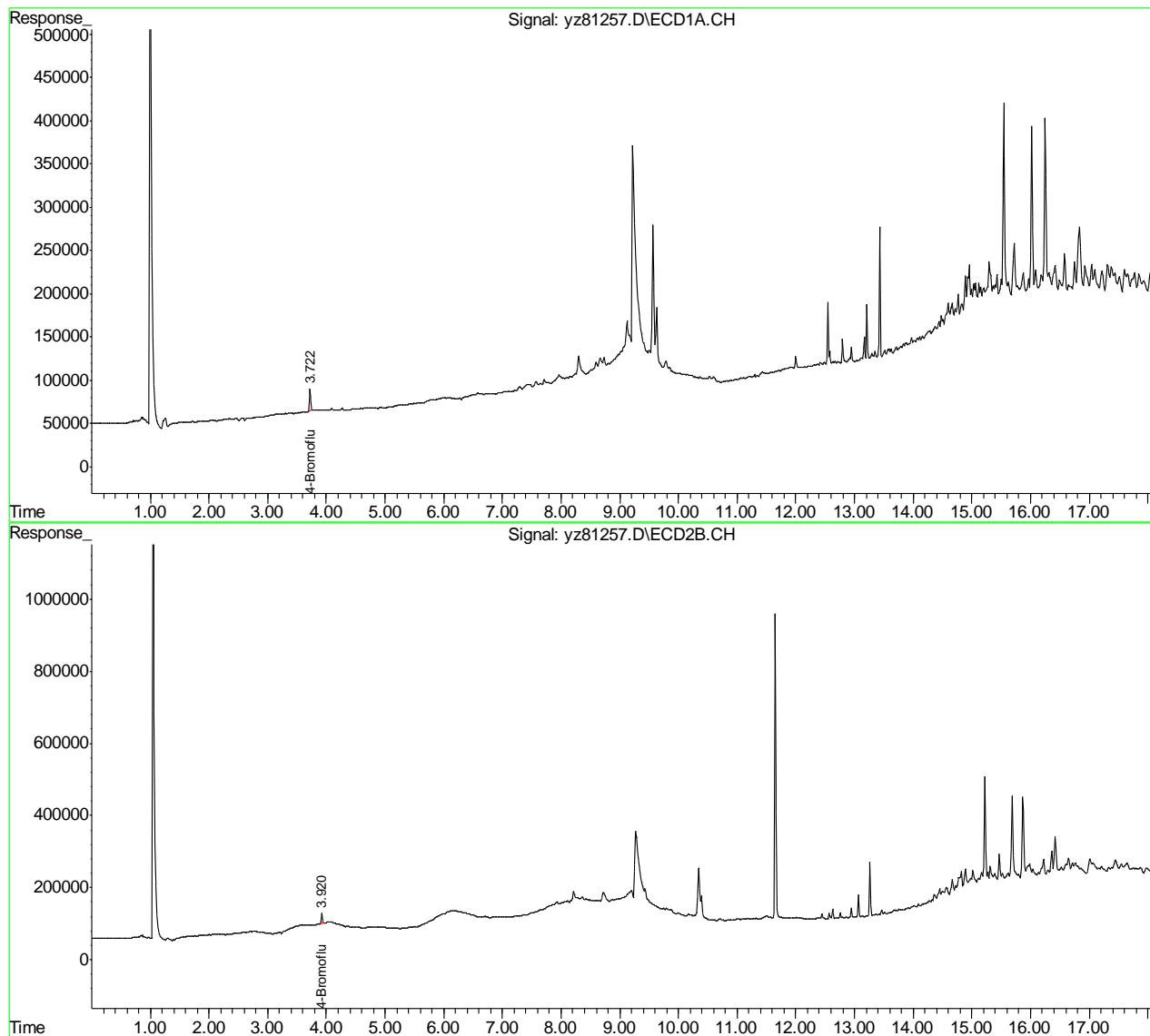
12

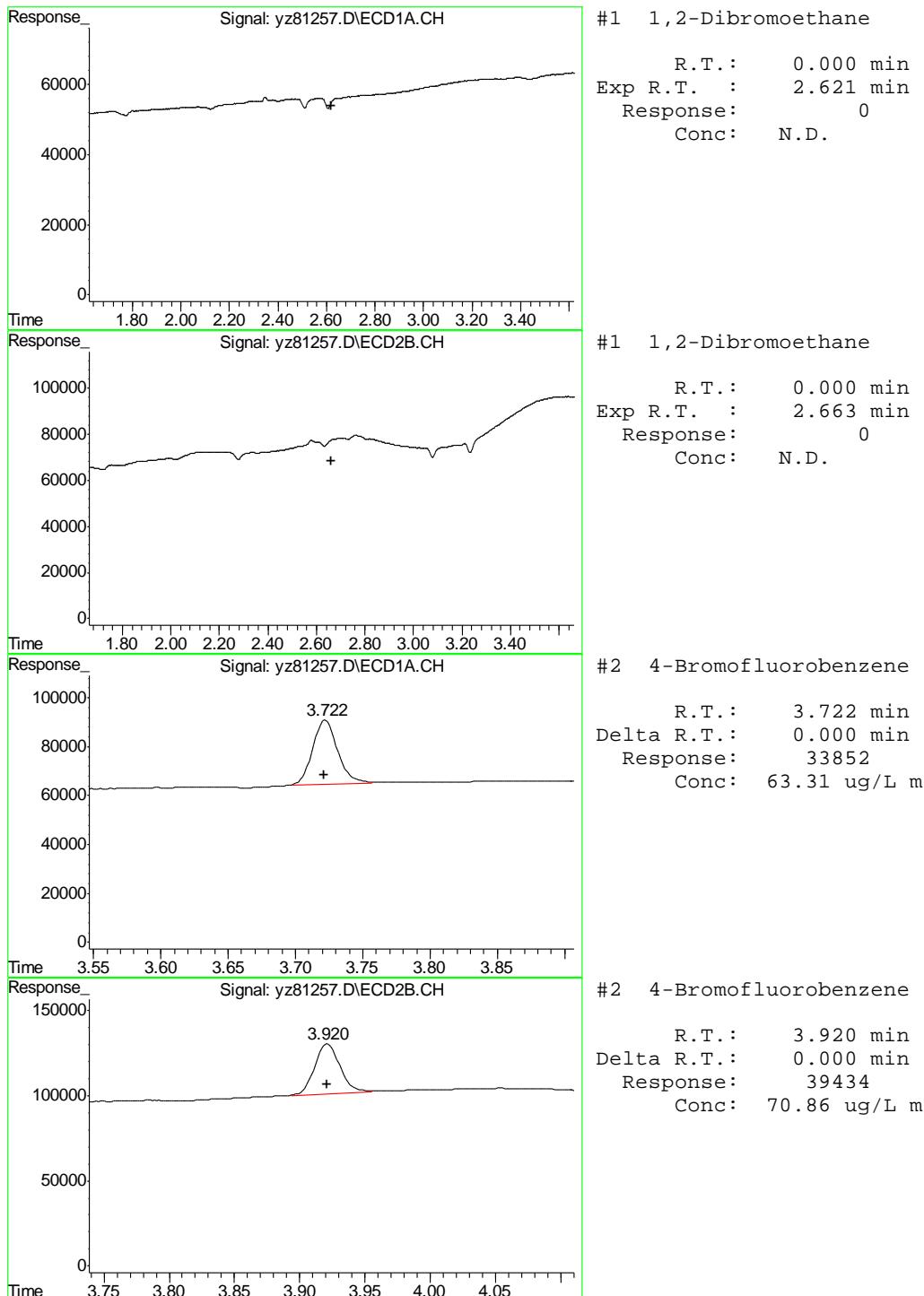
## Quantitation Report (QT Reviewed)

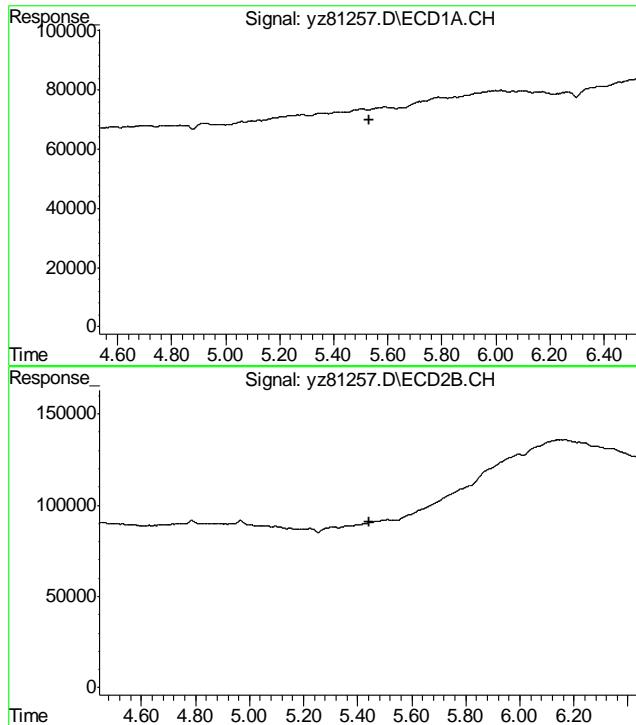
Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81257.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 09 Jun 2013 1:57 am  
 Operator : caobinz  
 Sample : jb38251-2  
 Misc : op33518,gyz7174,30.27,,,50,,soil  
 ALS Vial : 31 Sample Multiplier: 1

Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:16:09 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :







#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 5.533 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 5.445 min  
Response: 0  
Conc: N.D.

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Andri Piluri  
 06/11/13 11:26

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81258.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 09 Jun 2013 2:29 am  
 Operator : caobinz  
 Sample : jb38251-3  
 Misc : op33518,gyz7174,30.25,,,50,,soil  
 ALS Vial : 32 Sample Multiplier: 1

Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:16:44 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds

2) s 4-Bromofl...	3.723	3.921	35389	41480	66.495m	74.536m
Spiked Amount	50.000	Range	40 - 168	Recovery	= 132.99%	149.07%

Target Compounds

1) 1,2-Dibro...	0.000	0.000	0	0	N.D.	d
3) 1,2-Dibro...	0.000	0.000	0	0	N.D.	d

(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

12.1.3

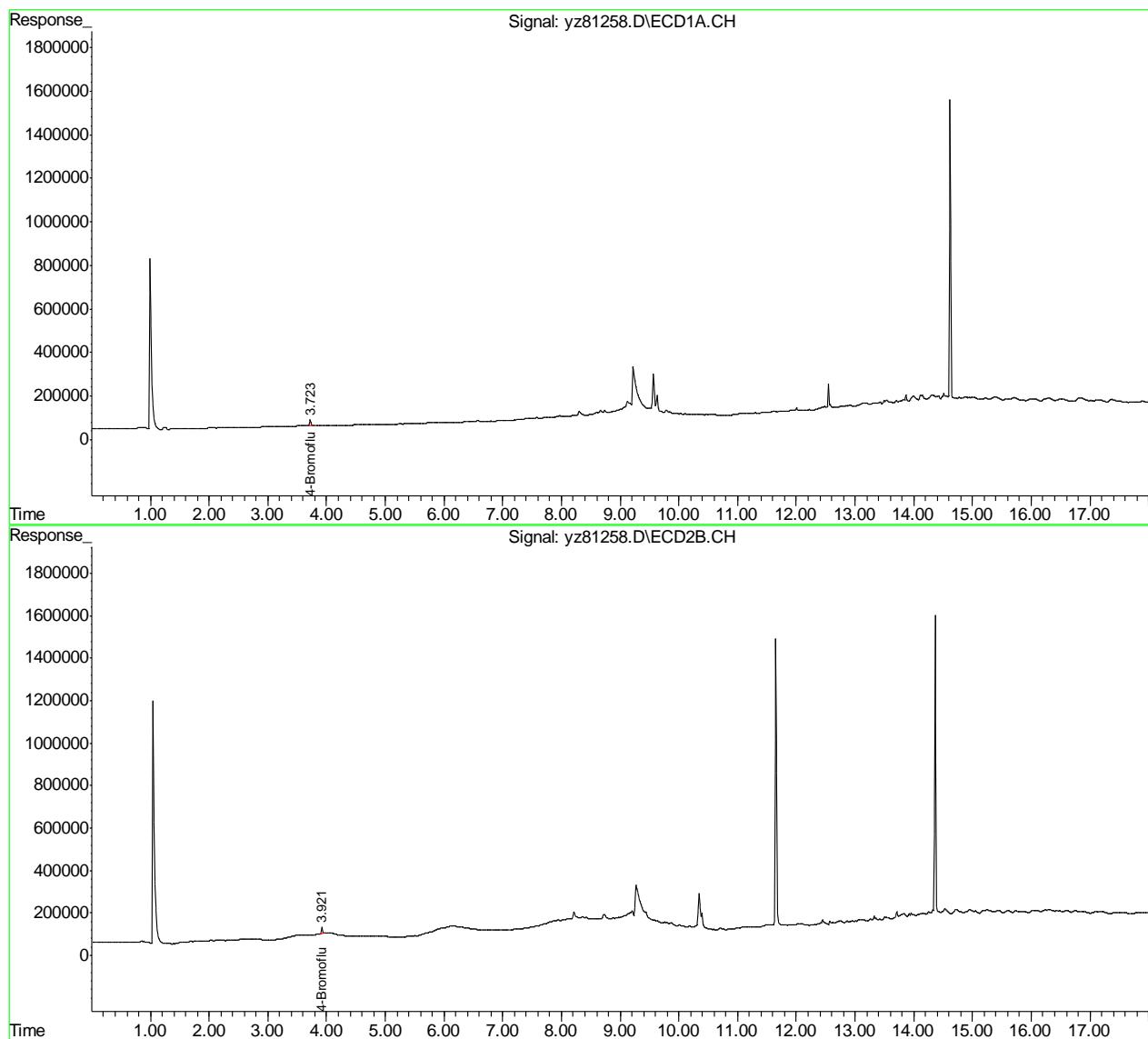
12

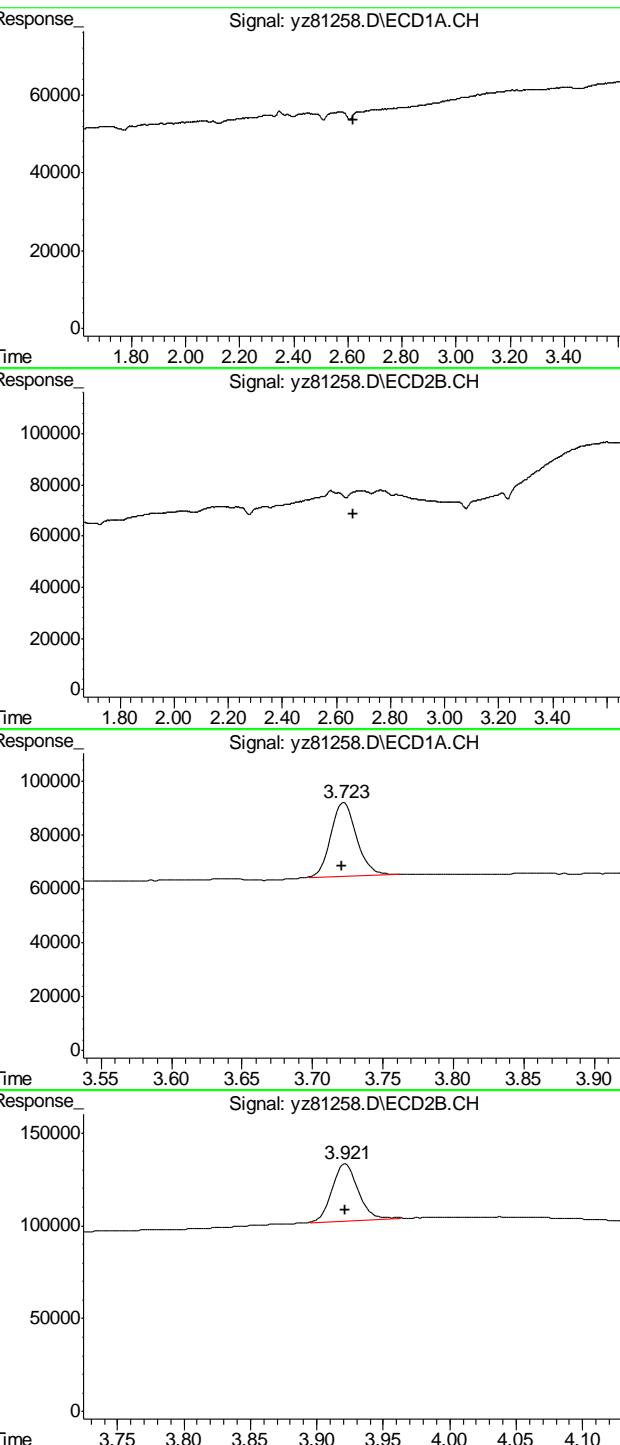
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81258.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 09 Jun 2013 2:29 am  
 Operator : caobinz  
 Sample : jb38251-3  
 Misc : op33518,gyz7174,30.25,,,50,,soil  
 ALS Vial : 32 Sample Multiplier: 1

Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:16:44 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :



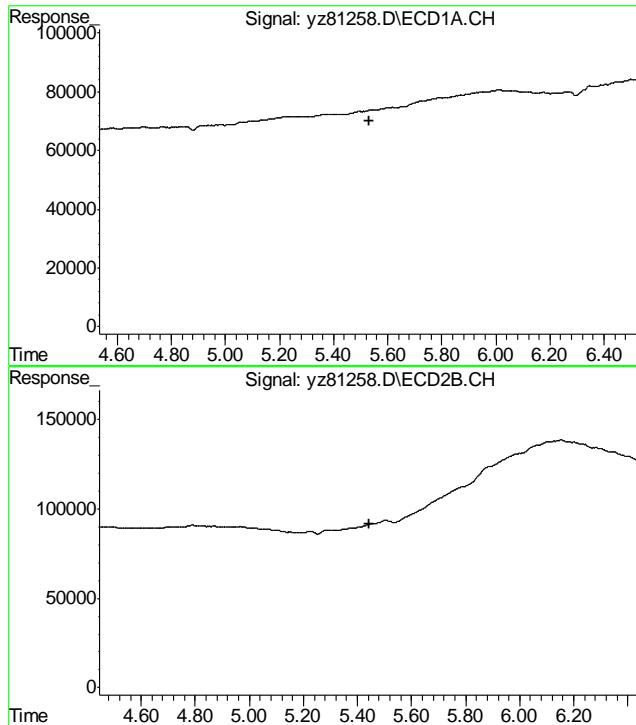


#1 1,2-Dibromoethane  
 R.T.: 0.000 min  
 Exp R.T.: 2.621 min  
 Response: 0  
 Conc: N.D.

#1 1,2-Dibromoethane  
 R.T.: 0.000 min  
 Exp R.T.: 2.663 min  
 Response: 0  
 Conc: N.D.

#2 4-Bromofluorobenzene  
 R.T.: 3.723 min  
 Delta R.T.: 0.002 min  
 Response: 35389  
 Conc: 66.50 ug/L m

#2 4-Bromofluorobenzene  
 R.T.: 3.921 min  
 Delta R.T.: 0.000 min  
 Response: 41480  
 Conc: 74.54 ug/L m



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 5.533 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 5.445 min  
Response: 0  
Conc: N.D.

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Andri Piluri  
 06/11/13 11:26

Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81259.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 09 Jun 2013 3:01 am  
 Operator : caobinz  
 Sample : jb38251-4  
 Misc : op33518,gyz7174,30.21,,,50,,soil  
 ALS Vial : 33 Sample Multiplier: 1

Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:18:33 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds

2) s 4-Bromofl...	3.721	3.922	40904	35621	77.986m	64.008m
Spiked Amount	50.000	Range	40 - 168	Recovery	= 155.97%	128.02%

Target Compounds

1) 1,2-Dibro...	2.623	2.662	15039	14642	2.116m	1.525m#
3) 1,2-Dibro...	0.000	0.000	0	0	N.D. d	N.D. d

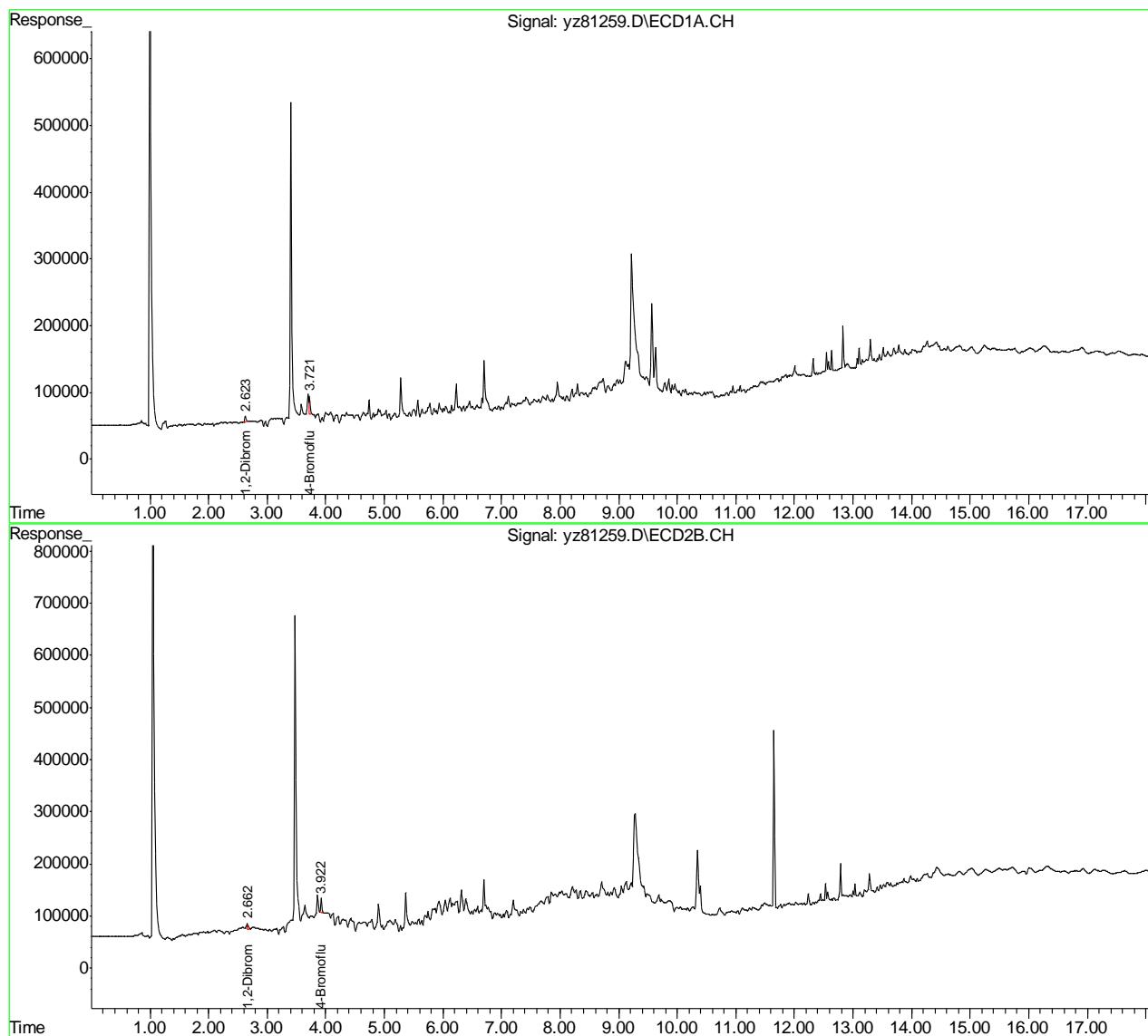
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

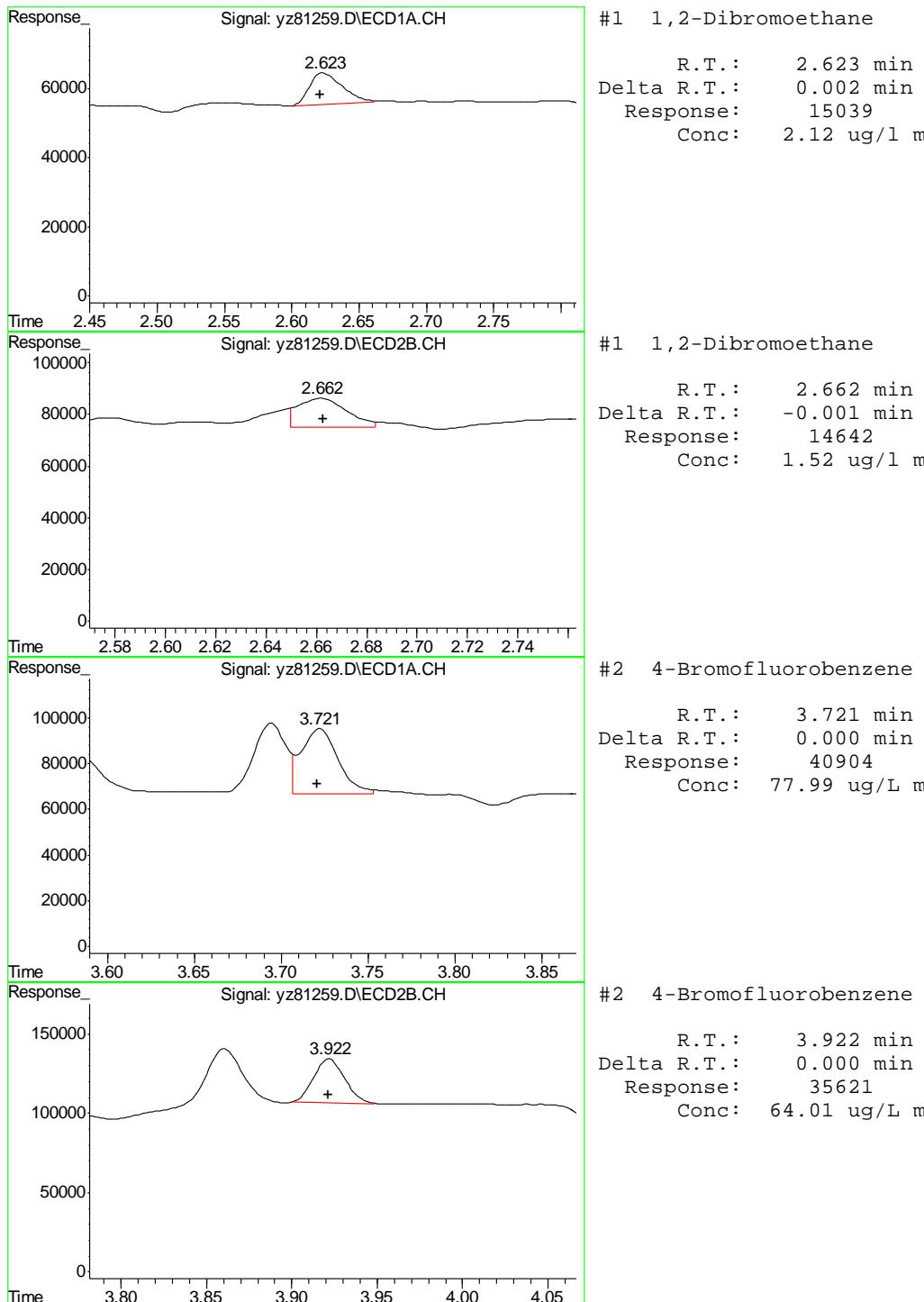
## Quantitation Report (QT Reviewed)

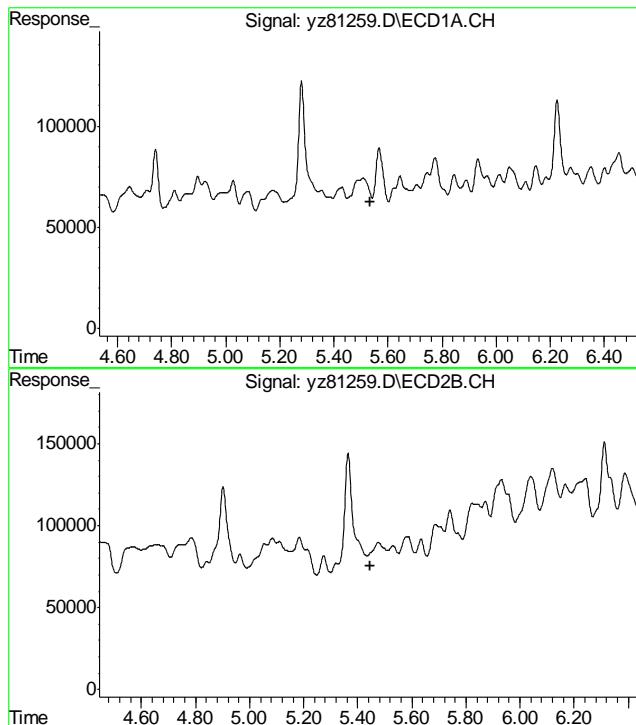
Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81259.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 09 Jun 2013 3:01 am  
 Operator : caobinz  
 Sample : jb38251-4  
 Misc : op33518,gyz7174,30.21,,,50,,soil  
 ALS Vial : 33 Sample Multiplier: 1

Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:18:33 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :







#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T.: 5.533 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T.: 5.445 min  
Response: 0  
Conc: N.D.

## Quantitation Report (QT Reviewed)

Manual Integrations  
APPROVED  
(compounds with "m" flag)

Andri Piluri  
06/11/13 11:26

Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81252.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 08 Jun 2013 11:21 pm  
 Operator : caobinz  
 Sample : op33518-mb  
 Misc : op33518,gyz7174,30.24,,,50,,soil  
 ALS Vial : 26 Sample Multiplier: 1

Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:10:37 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

Compound	RT#1	RT#2	Resp#1	Resp#2	ug/L	ug/L
----------	------	------	--------	--------	------	------

System Monitoring Compounds  
 2) s 4-Bromofl... 3.720 3.920 32857 37609 61.254m 67.580m  
 Spiked Amount 50.000 Range 40 - 168 Recovery = 122.51% 135.16%

Target Compounds  
 1) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d  
 3) 1,2-Dibro... 0.000 0.000 0 N.D. d N.D. d

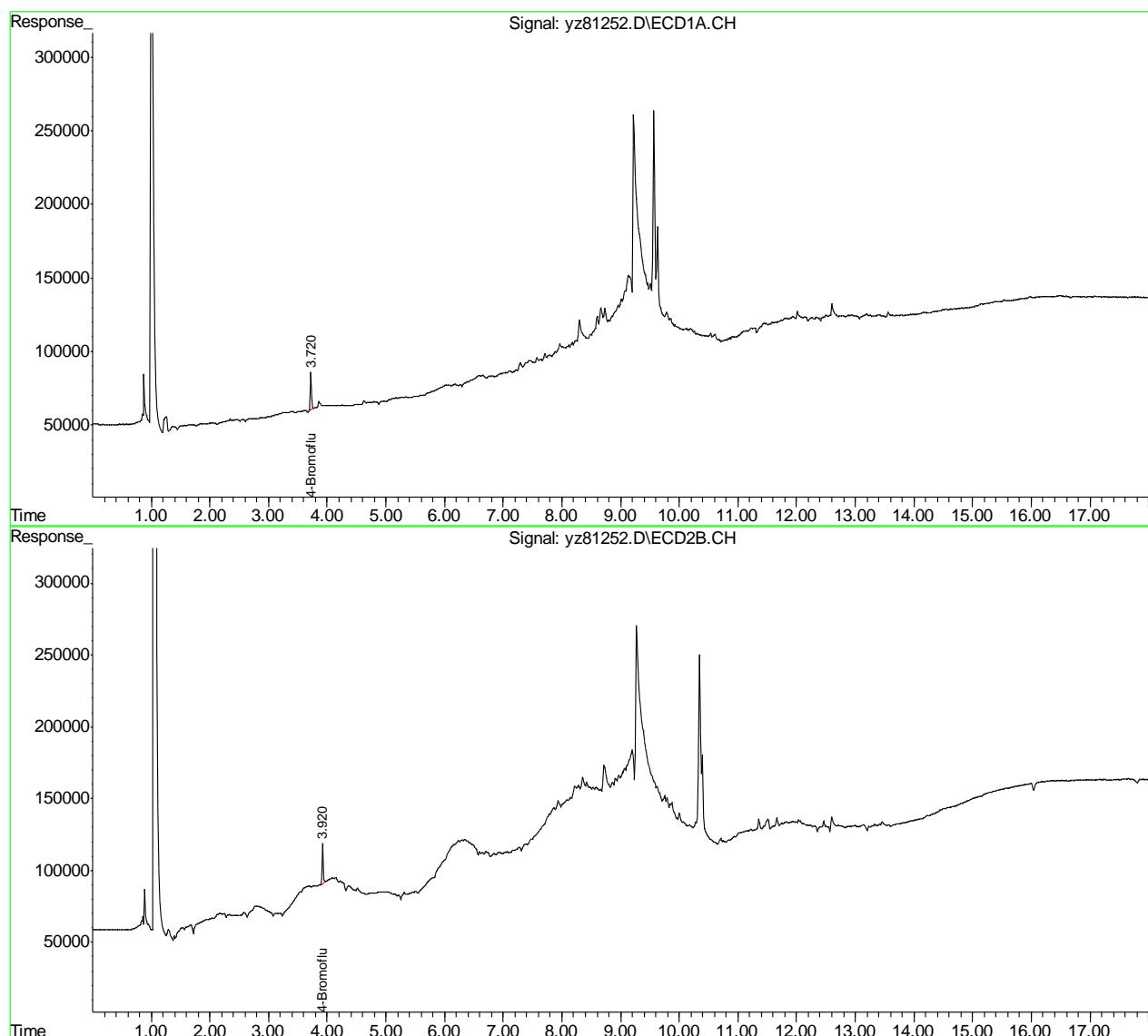
(f)=RT Delta > 1/2 Window (#)=Amounts differ by > 25% (m)=manual int.

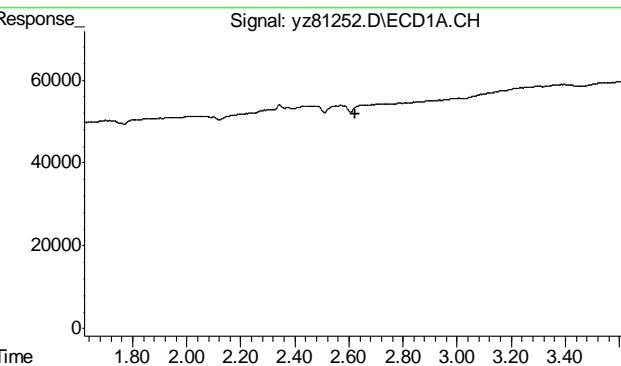
## Quantitation Report (QT Reviewed)

Data Path : C:\msdchem\1\DATA\yz130608\  
 Data File : yz81252.D  
 Signal(s) : Signal #1: ECD1A.CH Signal #2: ECD2B.CH  
 Acq On : 08 Jun 2013 11:21 pm  
 Operator : caobinz  
 Sample : op33518-mb  
 Misc : op33518,gyz7174,30.24,,,50,,soil  
 ALS Vial : 26 Sample Multiplier: 1

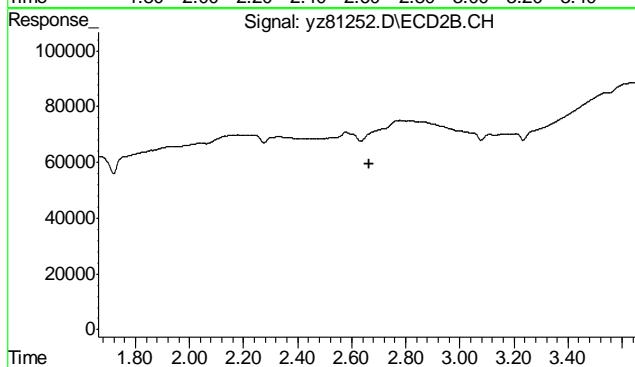
Integration File signal 1: rteint.p  
 Integration File signal 2: rteint2.p  
 Quant Time: Jun 11 09:10:37 2013  
 Quant Method : C:\msdchem\1\METHODS\Es130608.M  
 Quant Title : EDB /pest2/pest  
 QLast Update : Tue Jun 11 09:03:35 2013  
 Response via : Initial Calibration  
 Integrator: RTE 6890 Scale Mode: Small noise peaks clipped

Volume Inj. :  
 Signal #1 Phase : Signal #2 Phase:  
 Signal #1 Info : Signal #2 Info :

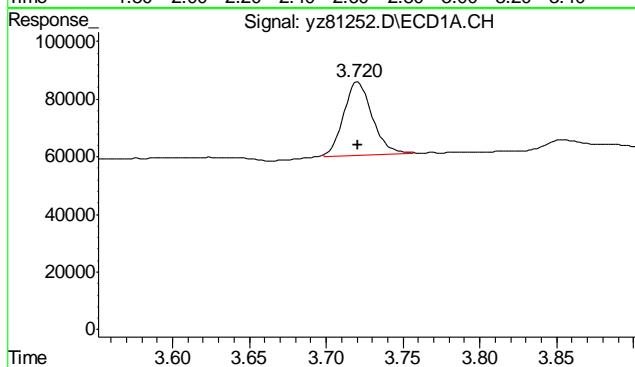




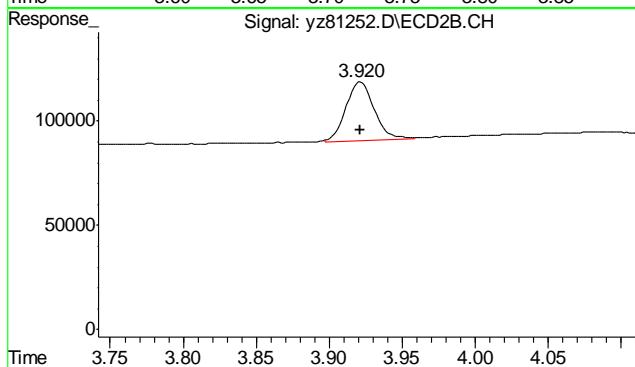
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 2.621 min  
Response: 0  
Conc: N.D.



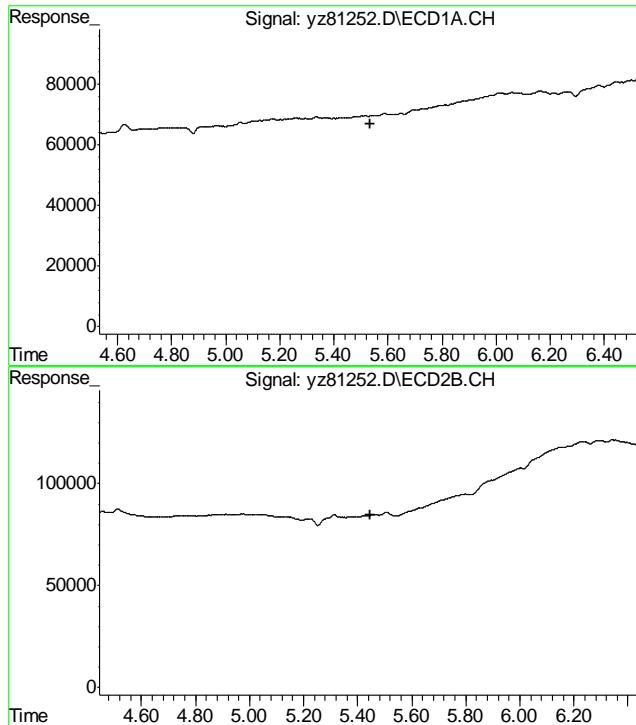
#1 1,2-Dibromoethane  
R.T.: 0.000 min  
Exp R.T.: 2.663 min  
Response: 0  
Conc: N.D.



#2 4-Bromofluorobenzene  
R.T.: 3.720 min  
Delta R.T.: 0.000 min  
Response: 32857  
Conc: 61.25 ug/L m



#2 4-Bromofluorobenzene  
R.T.: 3.920 min  
Delta R.T.: 0.000 min  
Response: 37609  
Conc: 67.58 ug/L m



#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 5.533 min  
Response: 0  
Conc: N.D.

#3 1,2-Dibromo-3-chloropropane

R.T.: 0.000 min  
Exp R.T. : 5.445 min  
Response: 0  
Conc: N.D.



## Metals Analysis

### QC Data Summaries

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Instrument Runlogs
- Initial and Continuing Calibration Blanks
- Initial and Continuing Calibration Checks
- High and Low Check Standards
- Interfering Element Check Standards
- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15702

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
20:00	MA15702-STD1	1		STD1
20:05	MA15702-STD2	1		STD2
20:09	MA15702-STD3	1		STD3
20:14	MA15702-STD4	1		STD4
20:18	MA15702-ICV1	1		
20:22	MA15702-ICB1	1		
20:27	MA15702-CCV1	1		
20:31	MA15702-CCB1	1		
20:35	MA15702-CRIA1	1		
20:39	MA15702-ICSA1	1		
20:44	MA15702-ICSAB1	1		
20:48	MP21111-B1	1		
20:52	MP21111-MB1	1		
20:57	MP21111-S1	1		
21:01	MP21111-S2	1		
21:05	MC20932-84A	1		(sample used for QC only; not part of login JB38251)
21:10	MP21111-SD1	5		
21:14	MP21111-B2	1		
21:18	MA15702-CCV2	1		
21:22	MA15702-CCB2	1		
21:27	MP21111-LC1	1		
21:31	ZZZZZ	10		
21:35	ZZZZZ	10		
21:40	ZZZZZ	1		
21:44	ZZZZZ	1		
21:48	ZZZZZ	1		
21:52	ZZZZZ	1		
21:57	ZZZZZ	1		
22:01	ZZZZZ	1		
22:05	ZZZZZ	1		
22:10	MA15702-CCV3	1		
22:14	MA15702-CCB3	1		
22:18	ZZZZZ	1		

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15702

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
22:23	ZZZZZZ	1		
22:27	ZZZZZZ	1		
22:31	ZZZZZZ	1		
22:35	ZZZZZZ	1		
22:40	ZZZZZZ	1		
22:44	ZZZZZZ	1		
22:48	ZZZZZZ	1		
22:53	ZZZZZZ	1		
22:57	ZZZZZZ	1		
23:01	MA15702-CCV4	1		
23:05	MA15702-CCB4	1		
23:10	MP21112-B1	1		
23:14	MP21112-MB1	1		
23:18	MP21112-S1	1		
23:23	MP21112-S2	1		
23:27	MC20885-1R	1		(sample used for QC only; not part of login JB38251)
23:31	MP21112-SD1	5		
23:35	MP21112-B2	1		
23:40	MP21112-LC1	1		
23:44	ZZZZZZ	1		
23:48	ZZZZZZ	1		
23:53	MA15702-CCV5	1		
23:57	MA15702-CCB5	1		
00:01	ZZZZZZ	1		
00:05	ZZZZZZ	1		
00:10	ZZZZZZ	1		
00:14	ZZZZZZ	1		
00:19	ZZZZZZ	1		
00:23	JB38251-1	1		
00:28	JB38251-2	1		
00:32	JB38251-3	1		
00:36	JB38251-4	1		
Last reportable sample/prep for job JB38251				
00:41	ZZZZZZ	1		

Accutest Laboratories Instrument Runlog  
Inorganics Analyses

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15702

Parameters: Pb

Time	Sample Description	Dilution Factor	PS Recov	Comments
00:45	MA15702-CCV6	1		
00:49	MA15702-CCB6	1		
00:54	ZZZZZZ	1		
00:58	ZZZZZZ	1		
01:02	ZZZZZZ	1		
01:07	ZZZZZZ	1		
01:11	ZZZZZZ	1		
01:15	ZZZZZZ	1		
01:19	ZZZZZZ	1		
01:24	MA15702-CCV7	1		
01:28	MA15702-CCB7	1		
01:32	MA15702-CRIA2	1		
01:37	MA15702-ICSA2	1		
01:41	MA15702-ICSAB2	1		
01:46	MA15702-CCV8	1		
01:50	MA15702-CCB8	1		

-----> Last reportable CCB for job JB38251

Refer to raw data for calibration curve and standards.

## INTERNAL STANDARD SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15702

Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
20:00	MA15702-STD1	2297 R	57284 R	13640 R
20:05	MA15702-STD2	2261	57570	13697
20:09	MA15702-STD3			13811
20:14	MA15702-STD4	2286	57481	13883
20:18	MA15702-ICV1	2251	56658	13762
20:22	MA15702-ICB1	2273	57675	13754
20:27	MA15702-CCV1	2261	57116	13975
20:31	MA15702-CCB1	2267	57520	13714
20:35	MA15702-CRIA1	2262	57458	13788
20:39	MA15702-ICSA1	2082	53376	13498
20:44	MA15702-ICSAB1	2083	53400	13337
20:48	MP21111-B1	2241	57022	13819
20:52	MP21111-MB1	2269	57797	13984
20:57	MP21111-S1	2268	58053	14029
21:01	MP21111-S2	2284	58269	14026
21:05	MC20932-84A	2304	58318	14119
21:10	MP21111-SD1	2277	57799	13968
21:14	MP21111-B2	2233	57122	13762
21:18	MA15702-CCV2	2261	57352	13765
21:22	MA15702-CCB2	2257	57526	13675
21:27	MP21111-LC1	2430	61707	14972
21:31	ZZZZZZ	2342	59385	14331
21:35	ZZZZZZ	2333	58842	14347
21:40	ZZZZZZ	2618	66439	16011
21:44	ZZZZZZ	2613	65640	15954
21:48	ZZZZZZ	2691	67284	16422
21:52	ZZZZZZ	2409	60551	14519
21:57	ZZZZZZ	2176	57779	14228
22:01	ZZZZZZ	2436	61476	14960
22:05	ZZZZZZ	2336	59387	14329
22:10	MA15702-CCV3	2271	57738	13803
22:14	MA15702-CCB3	2272	58286	13754
22:18	ZZZZZZ	2388	59623	14618

## INTERNAL STANDARD SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15702

Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
22:23	ZZZZZZ	2410	60858	14918
22:27	ZZZZZZ	2400	59942	14769
22:31	ZZZZZZ	2385	59850	15359
22:35	ZZZZZZ	2393	60979	14526
22:40	ZZZZZZ	2459	61953	14959
22:44	ZZZZZZ	2334	59141	14093
22:48	ZZZZZZ	2433	61038	14955
22:53	ZZZZZZ	2375	59808	14521
22:57	ZZZZZZ	2357	59940	14369
23:01	MA15702-CCV4	2245	57559	13698
23:05	MA15702-CCB4	2270	58169	13806
23:10	MP21112-B1	2225	57382	13836
23:14	MP21112-MB1	2261	58542	13787
23:18	MP21112-S1	2377	61620	14822
23:23	MP21112-S2	2365	61186	14817
23:27	MC20885-1R	2412	61604	14915
23:31	MP21112-SD1	2279	58194	13989
23:35	MP21112-B2	2223	58417	13643
23:40	MP21112-LC1	2443	62725	15000
23:44	ZZZZZZ	2383	60986	14928
23:48	ZZZZZZ	2441	62475	15045
23:53	MA15702-CCV5	2238	57439	13725
23:57	MA15702-CCB5	2255	58300	13672
00:01	ZZZZZZ	2446	62255	14820
00:05	ZZZZZZ	2437	66340	15959
00:10	ZZZZZZ	2512	62972	15225
00:14	ZZZZZZ	2324	61111	14709
00:19	ZZZZZZ	2456	61414	14842
00:23	JB38251-1	2478	62949	15125
00:28	JB38251-2	2397	61106	14969
00:32	JB38251-3	2295	59811	14411
00:36	JB38251-4	2463	62558	15313
00:41	ZZZZZZ	2489	63221	15250

## INTERNAL STANDARD SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

Analyst: EAL

Run ID: MA15702

Parameters: Pb

Time	Sample Description	Istd#1	Istd#2	Istd#3
00:45	MA15702-CCV6	2250	57120	13855
00:49	MA15702-CCB6	2260	58045	13749
00:54	ZZZZZZ	2359	60378	14760
00:58	ZZZZZZ	2420	62507	15005
01:02	ZZZZZZ	2419	63106	14940
01:07	ZZZZZZ	2346	60133	14644
01:11	ZZZZZZ	2397	61356	14788
01:15	ZZZZZZ	2279	59033	14217
01:19	ZZZZZZ	2211	59067	14435
01:24	MA15702-CCV7	2232	57822	13924
01:28	MA15702-CCB7	2233	58686	13759
01:32	MA15702-CRIA2	2247	58324	13704
01:37	MA15702-ICSA2	2041	53991	13458
01:41	MA15702-ICSAB2	2051	54499	13419
01:46	MA15702-CCV8	2231	58297	13797
01:50	MA15702-CCB8	2214	58170	13828

R = Reference for ISTD limits. ! = Outside limits.

## LEGEND:

Istd#	Parameter	Limits
Istd#1	Yttrium (2243)	70-130 %
Istd#2	Yttrium (3600)	70-130 %
Istd#3	Yttrium (3710)	70-130 %

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38251  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP      Date Analyzed: 06/04/13      Methods: SW846 6010C  
QC Limits: result < RL      Run ID: MA15702      Units: ug/l

Metal	Sample ID:	Time:	20:22		20:31		21:22		22:14	
			RL	IDL	raw	final	raw	final	raw	final
Aluminum		200	12							
Antimony		10	1.1							
Arsenic		10	1.7	anr						
Barium		50	.32							
Beryllium		4.0	.1							
Boron		100	1.1							
Cadmium		4.0	.25							
Calcium		5000	21							
Chromium		10	.48							
Cobalt		50	.29							
Copper		25	.93							
Gold		50	1.5							
Iron		100	3.5							
Lead		10	1.2	1.6	<10	1.0	<10	1.0	<10	0.80
Magnesium		5000	30							
Manganese		15	.16							
Molybdenum		100	.31							
Nickel		40	.45							
Palladium		50	2.2							
Platinum		50	6.4							
Potassium		5000	54							
Selenium		10	1.7							
Silicon		100	2							
Silver		5.0	.81							
Sodium		5000	16							
Strontium		10	.12							
Thallium		10	1.2							
Tin		100	.87							
Titanium		50	.66							
Tungsten		100	9.3							
Vanadium		10	.82							
Zinc		20	.45							
Zirconium		50	.45							

(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP  
QC Limits: result < RL

Date Analyzed: 06/04/13  
Run ID: MA15702

Methods: SW846 6010C  
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38251  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP      Date Analyzed: 06/04/13      Methods: SW846 6010C  
QC Limits: result < RL      Run ID: MA15702      Units: ug/l

Metal	Sample ID:	Time: RL	23:05 CCB4		23:57 CCB5		00:49 CCB6		01:28 CCB7	
			raw	final	raw	final	raw	final	raw	final
Aluminum		200	12							
Antimony		10	1.1							
Arsenic		10	1.7	anr						
Barium		50	.32							
Beryllium		4.0	.1							
Boron		100	1.1							
Cadmium		4.0	.25							
Calcium		5000	21							
Chromium		10	.48							
Cobalt		50	.29							
Copper		25	.93							
Gold		50	1.5							
Iron		100	3.5							
Lead		10	1.2	0.60	<10	0.0	<10	0.60	<10	1.2
Magnesium		5000	30							
Manganese		15	.16							
Molybdenum		100	.31							
Nickel		40	.45							
Palladium		50	2.2							
Platinum		50	6.4							
Potassium		5000	54							
Selenium		10	1.7							
Silicon		100	2							
Silver		5.0	.81							
Sodium		5000	16							
Strontium		10	.12							
Thallium		10	1.2							
Tin		100	.87							
Titanium		50	.66							
Tungsten		100	9.3							
Vanadium		10	.82							
Zinc		20	.45							
Zirconium		50	.45							

(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP  
QC Limits: result < RL

Date Analyzed: 06/04/13  
Run ID: MA15702

Methods: SW846 6010C  
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38251  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP      Date Analyzed: 06/04/13      Methods: SW846 6010C  
QC Limits: result < RL      Run ID: MA15702      Units: ug/l

Metal	Time:	Sample ID:		Methods:
	RL	IDL	raw	
Aluminum	200	12		
Antimony	10	1.1		
Arsenic	10	1.7	anr	
Barium	50	.32		
Beryllium	4.0	.1		
Boron	100	1.1		
Cadmium	4.0	.25		
Calcium	5000	21		
Chromium	10	.48		
Cobalt	50	.29		
Copper	25	.93		
Gold	50	1.5		
Iron	100	3.5		
Lead	10	1.2	0.20	<10
Magnesium	5000	30		
Manganese	15	.16		
Molybdenum	100	.31		
Nickel	40	.45		
Palladium	50	2.2		
Platinum	50	6.4		
Potassium	5000	54		
Selenium	10	1.7		
Silicon	100	2		
Silver	5.0	.81		
Sodium	5000	16		
Strontium	10	.12		
Thallium	10	1.2		
Tin	100	.87		
Titanium	50	.66		
Tungsten	100	9.3		
Vanadium	10	.82		
Zinc	20	.45		
Zirconium	50	.45		

(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 1 - Initial and Continuing Calibration Blanks

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP  
QC Limits: result < RL

Date Analyzed: 06/04/13  
Run ID: MA15702

Methods: SW846 6010C  
Units: ug/l

Time:	
Sample ID:	
Metal	

(anr) Analyte not requested

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38251  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP Date Analyzed: 06/04/13 Methods: SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA15702 Units: ug/l

Time:	20:18	20:27	21:18	
Sample ID:	ICV	CCV	CCV	
Metal	True	Results % Rec	True	Results % Rec

Aluminum									
Antimony									
Arsenic	anr								
Barium									
Beryllium									
Boron									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Gold									
Iron									
Lead	3000	2970	99.0	2000	1960	98.0	2000	1950	97.5
Magnesium									
Manganese									
Molybdenum									
Nickel									
Palladium									
Platinum									
Potassium									
Selenium									
Silicon									
Silver									
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Tungsten									
Vanadium									
Zinc									
Zirconium									

(\*) Outside of QC limits

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/04/13

Run ID: MA15702

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3  
**13**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38251  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP Date Analyzed: 06/04/13 Methods: SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA15702 Units: ug/l

Time:	22:10	CCV	Results	% Rec	Time:	23:01	CCV	Results	% Rec	Time:	23:53	CCV	Results	% Rec
Metal	True	CCV3	True		Metal	CCV4	True	Results	% Rec	Metal	CCV5	True	Results	% Rec

Aluminum														
Antimony														
Arsenic	anr													
Barium														
Beryllium														
Boron														
Cadmium														
Calcium														
Chromium														
Cobalt														
Copper														
Gold														
Iron														
Lead	2000	1940	97.0		2000	1960	98.0		2000	1960	98.0			
Magnesium														
Manganese														
Molybdenum														
Nickel														
Palladium														
Platinum														
Potassium														
Selenium														
Silicon														
Silver														
Sodium														
Strontium														
Thallium														
Tin														
Titanium														
Tungsten														
Vanadium														
Zinc														
Zirconium														

(\*) Outside of QC limits

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/04/13

Run ID: MA15702

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3  
**13**

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38251  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP Date Analyzed: 06/04/13 Methods: SW846 6010C  
QC Limits: 90 to 110 % Recovery Run ID: MA15702 Units: ug/l

Time:	00:45	CCV	Results	% Rec	Time:	01:24	CCV	Results	% Rec	Time:	01:46	CCV	Results	% Rec
Metal	True	CCV	CCV6		True	CCV	CCV7	Results	% Rec	True	CCV	CCV8	Results	% Rec

Aluminum														
Antimony														
Arsenic	anr													
Barium														
Beryllium														
Boron														
Cadmium														
Calcium														
Chromium														
Cobalt														
Copper														
Gold														
Iron														
Lead	2000	1970	98.5		2000	1990	99.5		2000	2000	100.0			
Magnesium														
Manganese														
Molybdenum														
Nickel														
Palladium														
Platinum														
Potassium														
Selenium														
Silicon														
Silver														
Sodium														
Strontium														
Thallium														
Tin														
Titanium														
Tungsten														
Vanadium														
Zinc														
Zirconium														

(\*) Outside of QC limits

CALIBRATION CHECK STANDARDS SUMMARY  
Initial and Continuing Calibration Checks

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

QC Limits: 90 to 110 % Recovery

Date Analyzed: 06/04/13

Run ID: MA15702

Methods: SW846 6010C

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

13.1.3  
**13**

## LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

QC Limits: CRI 70-130% CRIA 70-130%

Run ID: MA15702

Units: ug/l

Metal	Time:		20:35		01:32				
	Sample ID:	CRI	CRIA	CRIAL	Results	% Rec	CRIA2	Results	% Rec
Aluminum	True	200	True	200					
Antimony	6.0	10							
Arsenic	4.0	10		anr					
Barium	50	50							
Beryllium	4.0	4.0							
Boron	100	100							
Cadmium	4.0	4.0							
Calcium	5000	5000							
Chromium	10	10							
Cobalt	50	50							
Copper	25	25							
Gold	50	50							
Iron	100	100							
Lead	5.0	10	10.7	107.0	9.9	99.0			
Magnesium	5000	5000							
Manganese	15	15							
Molybdenum	100	100							
Nickel	40	40							
Palladium	50	50							
Platinum	50	50							
Potassium	5000	5000							
Selenium	10	10							
Silicon	100	100							
Silver	5.0	5.0							
Sodium	5000	5000							
Strontium	10	10							
Thallium	5.0	10							
Tin	100	100							
Titanium	50	50							
Tungsten	100	100							
Vanadium	10	10							
Zinc	20	20							
Zirconium	50	50							

(\*) Outside of QC limits

LOW CALIBRATION CHECK STANDARDS SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

QC Limits: CRI 70-130% CRIA 70-130%

Run ID: MA15702

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

**INTERFERING ELEMENT CHECK STANDARDS SUMMARY**  
**Part 1 - ICSA and ICSAB Standards**

Login Number: JB38251  
 Account: ALNJ - Accutest New Jersey  
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP      Date Analyzed: 06/04/13      Methods: SW846 6010C  
 QC Limits: 80 to 120 % Recovery      Run ID: MA15702      Units: ug/l

Metal	Time:		20:39		20:44		01:37		01:41	
	Sample ID:	ICSA	ICSA	ICSA1 Results	% Rec	ICSA1 Results	% Rec	ICSA2 Results	% Rec	ICSA2 Results
Aluminum	500000	500000	518000	103.6	523000	104.6	522000	104.4	527000	105.4
Antimony		2000	-1.5		2070	103.5	-0.30		2120	106.0
Arsenic		2000	2.7		2060	103.0	5.3		2090	104.5
Barium		500	-0.40		510	102.0	-0.30		510	102.0
Beryllium		500	0.10		477	95.4	0.10		462	92.4
Boron		1000	5.8		1020	102.0	4.9		1020	102.0
Cadmium		1000	0.10		1030	103.0	0.10		1040	104.0
Calcium	500000	500000	462000	92.4	468000	93.6	469000	93.8	471000	94.2
Chromium		500	-0.60		495	99.0	-0.60		491	98.2
Cobalt		500	-0.50		484	96.8	-1.1		490	98.0
Copper		500	1.8		515	103.0	2.7		507	101.4
Gold		500	4.3		498	99.6	2.7		495	99.0
Iron	200000	200000	193000	96.5	194000	97.0	196000	98.0	196000	98.0
Lead		1000	3.8		913	91.3	2.0		931	93.1
Magnesium	500000	500000	490000	98.0	493000	98.6	483000	96.6	485000	97.0
Manganese		500	0.70		499	99.8	0.60		503	100.6
Molybdenum		1000	-0.60		972	97.2	-0.80		981	98.1
Nickel		1000	-1.6		896	89.6	-1.6		928	92.8
Palladium		500	-43		499	99.8	-46		495	99.0
Platinum		500	-17		482	96.4	-20		486	97.2
Potassium			77.4		55.6		117		152	
Selenium		2000	-1.2		1980	99.0	-0.50		2020	101.0
Silicon		2000	37.4		2210	110.5	41.4		2290	114.5
Silver		1000	-0.30		1050	105.0	0.40		1040	104.0
Sodium			76.1		85.6		80.5		67.3	
Strontium		1000	1.1		999	99.9	0.90		984	98.4
Thallium		2000	-1.7		1900	95.0	-0.60		1890	94.5
Tin		1000	0.10		975	97.5	-0.60		1020	102.0
Titanium		500	9.4		520	104.0	10.0		519	103.8
Tungsten		2000	-37		1860	93.0	-43		1840	92.0
Vanadium		500	-1.0		511	102.2	-1.3		502	100.4
Zinc		1000	-0.70		912	91.2	-1.0		923	92.3
Zirconium		500	0.70		460	92.0	0.50		454	90.8

(\*) Outside of QC limits

INTERFERING ELEMENT CHECK STANDARDS SUMMARY  
Part 1 - ICSA and ICSAB Standards

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

File ID: SB060413M3.ICP

Date Analyzed: 06/04/13

Methods: SW846 6010C

QC Limits: 80 to 120 % Recovery

Run ID: MA15702

Units: ug/l

Time:

Sample ID:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: JB38251  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

06/04/13

Metal	RL	IDL	MDL	MB raw	final
Aluminum	20	1.2	3.6		
Antimony	1.0	.11	.15		
Arsenic	1.0	.17	.21		
Barium	5.0	.032	.073		
Beryllium	0.40	.01	.024		
Boron	10	.11	.11		
Cadmium	0.40	.025	.042		
Calcium	500	2.1	6.3		
Chromium	1.0	.048	.095		
Cobalt	5.0	.029	.047		
Copper	2.5	.093	.56		
Gold	5.0	.15	.43		
Iron	10	.35	.87		
Lead	1.0	.12	.17	0.050	<1.0
Magnesium	500	3	5.1		
Manganese	1.5	.016	.04		
Molybdenum	10	.031	.07		
Nickel	4.0	.045	.044		
Palladium	5.0	.22	.64		
Platinum	5.0	.64	1.5		
Potassium	500	5.4	8.6		
Selenium	1.0	.17	.35		
Silicon	10	.2	3.3		
Silver	0.50	.081	.13		
Sodium	500	1.6	3.3		
Strontium	1.0	.012	.03		
Thallium	1.0	.12	.13		
Tin	10	.087	.14		
Titanium	5.0	.066	.14		
Tungsten	10	.93	.94		
Vanadium	1.0	.082	.13		
Zinc	2.0	.045	.16		
Zirconium	5.0	.045	.088		

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: JB38251  
Account: ALNJ - Accutest New Jersey  
Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21112: JB38251-1, JB38251-2, JB38251-3, JB38251-4

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

## MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: mg/kg

Prep Date:

06/04/13

Metal	MC20885-1R Original MS	Spikelot MPICP	% Rec	QC Limits
-------	---------------------------	-------------------	-------	--------------

Aluminum

Antimony

Arsenic anr

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead 38.5 132 103 91.0 75-125

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.2

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21112: JB38251-1, JB38251-2, JB38251-3, JB38251-4

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

13.2.2

13

## MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: mg/kg

Prep Date:

06/04/13

Metal	MC20885-1R Original	MSD MPICP	Spikelot % Rec	MSD RPD	QC Limit
-------	------------------------	--------------	-------------------	------------	-------------

Aluminum

Antimony

Arsenic anr

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead 38.5 131 103 90.0 0.8 20

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.2

13

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21112: JB38251-1, JB38251-2, JB38251-3, JB38251-4

Results < IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

13.2.2

13

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB38251  
 Account: ALNJ - Accutest New Jersey  
 Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
 Matrix Type: SOLID

Methods: SW846 6010C  
 Units: mg/kg

Prep Date:

06/04/13

06/04/13

Metal	BSP Result	Spikelot MPICP	QC % Rec	BSD Limits	Spikelot Result	BSD MPICP	QC % Rec	BSD RPD	QC Limit
Aluminum									
Antimony									
Arsenic	anr								
Barium									
Beryllium									
Boron									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Gold									
Iron									
Lead	96.1	100	96.1	80-120	95.6	100	95.6	0.5	20
Magnesium									
Manganese									
Molybdenum									
Nickel									
Palladium									
Platinum									
Potassium									
Selenium									
Silicon									
Silver									
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Tungsten									
Vanadium									
Zinc									
Zirconium									

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21112: JB38251-1, JB38251-2, JB38251-3, JB38251-4

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

13.2.3

13

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: mg/kg

Prep Date: 06/04/13

Metal	LCS Result	Spikelot MPLCS78	QC % Rec	Limits
-------	------------	------------------	----------	--------

Aluminum

Antimony

Arsenic anr

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead 86.3 91.7 94.1 82-118

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.3

13

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: mg/kg

Prep Date:

Metal

Associated samples MP21112: JB38251-1, JB38251-2, JB38251-3, JB38251-4

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested

## SERIAL DILUTION RESULTS SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLIDMethods: SW846 6010C  
Units: ug/l

Prep Date:

06/04/13

Metal	MC20885-1R Original	SDL 1:5	%DIF	QC Limits
-------	------------------------	---------	------	--------------

Aluminum

Antimony

Arsenic anr

Barium

Beryllium

Boron

Cadmium

Calcium

Chromium

Cobalt

Copper

Gold

Iron

Lead 378 401 6.1 0-10

Magnesium

Manganese

Molybdenum

Nickel

Palladium

Platinum

Potassium

Selenium

Silicon

Silver

Sodium

Strontium

Thallium

Tin

Titanium

Tungsten

Vanadium

Zinc

Zirconium

13.2.4

13

SERIAL DILUTION RESULTS SUMMARY

Login Number: JB38251

Account: ALNJ - Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

QC Batch ID: MP21112  
Matrix Type: SOLID

Methods: SW846 6010C  
Units: ug/l

Prep Date:

Metal

Associated samples MP21112: JB38251-1, JB38251-2, JB38251-3, JB38251-4

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits  
(anr) Analyte not requested



## General Chemistry

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### QC Data Summaries

(Accutest Labs of New England, Inc.)

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Includes the following where applicable:

- Percent Solids Raw Data Summary

## Percent Solids Raw Data Summary

Page 1 of 1

Job Number: JB38251

Account: ALNJ Accutest New Jersey

Project: AQTPAW: Sun-Marcus Hook Refinery, Philadelphia, PA

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Sample: JB38251-1      Analyzed: 02-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI-5\_MW-438\_8-10'\_52913

Wet Weight (Total)	37.01	g
Tare Weight	21.408	g
Dry Weight (Total)	33.555	g
Solids, Percent	77.9	%

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Sample: JB38251-2      Analyzed: 02-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI-5\_MW-434\_0-2'\_52913

Wet Weight (Total)	41.207	g
Tare Weight	29.745	g
Dry Weight (Total)	40.168	g
Solids, Percent	90.9	%

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Sample: JB38251-3      Analyzed: 02-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI-5\_MW-442\_0-2'\_052913

Wet Weight (Total)	36.092	g
Tare Weight	24.41	g
Dry Weight (Total)	34.919	g
Solids, Percent	90	%

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Sample: JB38251-4      Analyzed: 02-JUN-13 by HS      Method: SM21 2540 B MOD.  
ClientID: AOI-5\_MW-442\_6-8'\_052913

Wet Weight (Total)	32.316	g
Tare Weight	21.322	g
Dry Weight (Total)	30.016	g
Solids, Percent	79.1	%

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## General Chemistry

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### QC Data Summaries

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Includes the following where applicable:

- Percent Solids Raw Data Summary

## Percent Solids Raw Data Summary

Page 1 of 1

Job Number: JB38251

Account: AQTPAW Aquaterra Technologies, Inc.

Project: Sun-Marcus Hook Refinery, Philadelphia, PA

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Sample: JB38251-1      Analyzed: 02-JUN-13 by AMA      Method: SM21 2540 B MOD.  
ClientID: AOI-5\_MW-438\_8-10'\_52913

Wet Weight (Total)	37.01	g
Tare Weight	21.408	g
Dry Weight (Total)	33.555	g
Solids, Percent	77.9	%

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Sample: JB38251-2      Analyzed: 02-JUN-13 by AMA      Method: SM21 2540 B MOD.  
ClientID: AOI-5\_MW-434\_0-2'\_52913

Wet Weight (Total)	41.207	g
Tare Weight	29.745	g
Dry Weight (Total)	40.168	g
Solids, Percent	90.9	%

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Sample: JB38251-3      Analyzed: 02-JUN-13 by AMA      Method: SM21 2540 B MOD.  
ClientID: AOI-5\_MW-442\_0-2'\_052913

Wet Weight (Total)	36.092	g
Tare Weight	24.41	g
Dry Weight (Total)	34.919	g
Solids, Percent	90	%

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Sample: JB38251-4      Analyzed: 02-JUN-13 by AMA      Method: SM21 2540 B MOD.  
ClientID: AOI-5\_MW-442\_6-8'\_052913

Wet Weight (Total)	32.316	g
Tare Weight	21.322	g
Dry Weight (Total)	30.016	g
Solids, Percent	79.1	%

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